Articles

Law Versus Power on the High Frontier: The Case for a Rule-Based Regime for Outer Space

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I. INTRODUCTION

The future of peace and security in outer space is at a critical juncture. The legal regime that guides commercial, military, and scientific activities in

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space is fragmented and increasingly inadequate to meet the challenges posed by the growing number of actors seeking to exploit space. The most serious challenge to the space regime is posed by the stated intent of the George W. Bush administration to pursue national dominance in space, which may eventually include stationing weapons there. Although space is already militarized to some degree—that is, used for military support purposes—no nation has yet placed weapons in space. Such a move would cross an important and longstanding threshold, likely provoking a battle for national superiority in space dominated by the United States. It would seriously undermine the current legal order in space that is widely supported by the rest of the world. The deployment of ground-based antisatellite (ASAT) weapons would also constitute a serious departure from the current regime. Without a concerted effort to develop a more comprehensive legal regime for space that will limit unconstrained weaponization, the international community will likely face a new military competition in space, with destabilizing consequences for national and global security. Such a competition will place at risk existing military, commercial, and scientific activities.

With the events of September 11, 2001, the subsequent "war on terrorism," and the U.S. occupation of Iraq dominating the headlines, the issue of national missile defense, and with it the larger issue of the control and weaponization of space, has receded from the front pages. The problem is imminent, however, as the United States moves forward with Pentagon plans to develop space control and global engagement capabilities,[1] which imply the deployment of weapons in space. If conflict over the use of space, or even actual conflict in space, is to be prevented or at least significantly constrained by general agreement, the international community will need to agree on permitted activity in space and more refined arrangements for distributing the benefits of that activity. Such a regime would be in the strong interest of commercial, scientific, and military support constituencies worldwide. Without such agreement, space will largely be shaped by the short-term interests of power rather than the long-term interests of law.

This Article develops the case for a more refined, rule-based regime for outer space. In Part II of the Article, I describe the current challenge to the space regime posed by the U.S. pursuit of national dominance in space. After summarizing the current legal regime, I outline three alternative scenarios for the future of space—national dominance, "muddling through," and a strengthened legal regime—and suggest why the first two are unlikely to lead to stable outcomes over the long term. In Part III of the Article, I argue that the traditional high seas analogy for outer space is no longer an adequate basis for rule-making for space, and in Part IV, I make the case for a strengthened, rule-based regime organized around new guiding principles: comprehensive security, equal protection in space, and equity in access to space. These principles would form the core of a space sanctuary regime. I justify each of

1. *See* U.S. SPACE COMMAND, LONG RANGE PLAN: IMPLEMENTING US SPACECOM VISION FOR 2020, chs. 5-6 (1998), http://fas.org/spp/military/docops/usspac/lrp/toc.htm; Jim Wolf, *Bush Moves Toward 'Star Wars' Missile Defense*, REUTERS, Feb. 2, 2004, http://www.globalpolicy.org/empire/intervention/2004/0202missdefense.htm.

the principles and suggest some guidelines for operationalizing them in practice. In making the case for a strengthened regime, I draw on insights from the evolution of the 1982 United Nations Convention on the Law of the Sea (LOS Treaty or LOS Convention)[2] about both the multilateral lawmaking process and new principles that might be used in developing a more specified legal regime for space.

II. THE CURRENT CHALLENGE: LAW VERSUS POWER IN OUTER SPACE

The dominant challenge to the future of outer space lies in the existence of two competing visions of how activities in space should be organized, managed, and controlled. The first view emphasizes the central role of law in preserving space for peaceful purposes and in promoting international cooperation in the use and exploitation of space for the benefit of all. This view emphasizes the benefits of a multilateral legal regime as the best way to balance the various interests in space, to manage the possible interference of activities, and to ensure that no single power dominates and possibly jeopardizes access to space by others. Power is constrained by law, and national interests are pursued in the context of a developed and articulated legal framework and an assumption of mutual and reciprocal interests. This is the logic of the current legal regime for space (however weak and incomplete), as reflected in a set of outer space, arms control, and commercial treaties and agreements beginning in the 1960s.[3]

The second view is the logic of national dominance projected by the former U.S. Space Command (SPACECOM).[4] With the United States increasingly reliant on space for both commercial and military support activities, SPACECOM argues that U.S. assets in space are vulnerable to attack and that, in order to protect them, the United States needs to dominate space militarily. SPACECOM's *Vision for 2020* argues that the protection of space requires superior U.S. space warfare capability and proclaims its members "stewards for military space."[5] It sets out two principal themes: (1) dominating the space dimension of military operations to protect U.S. interests and investment; and (2) integrating space forces into warfighting capabilities across the full spectrum of conflict.[6] As Air Force General Joseph W. Ashy, a former commander of SPACECOM, explained, the United States "will engage terrestrial targets someday—ships, airplanes, land targets—from space. We will engage targets in space, from space . . . . [The missions are] already

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2. United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter LOS Convention].

3. *See infra* notes 27-28.

4. In October 2002, SPACECOM was incorporated into the U.S. Strategic Command. *See infra* note 12 and accompanying text.

5. The Pentagon's vision for outer space is contained in U.S. SPACE COMMAND, VISION FOR 2020 (1997), http://www.fas.org/spp/military/docops/usspac/visbook.pdf [hereinafter VISION FOR 2020]. *See also* AIR FORCE SPACE COMMAND, STRATEGIC MASTER PLAN, FY04 AND BEYOND (2002), http://www.cdi.org/news/space-security/afspc-strategic-master-plan-04-beyond.pdf; U.S. SPACE COMMAND, *supra* note 1; JAMES E. OBERG, SPACE POWER THEORY (1999), http://www.fas.org/spp/military/docops/usspac/spt/index/html.

6. *See* VISION FOR 2020, *supra* note 5.

assigned, and we've written the concepts of operations."[7] SPACECOM also claims that the United States must establish a military presence in space in order to preempt possible efforts by other nations to do so.[8]

Although this doctrine was once advanced exclusively by SPACECOM, prominent civilian defense officials have endorsed the global engagement strategy, and have begun to implement changes in Pentagon doctrine, organization, and budgets to move in that direction. The January 2001 Rumsfeld Commission report on the management of U.S. space assets, produced by a study commission chaired by Donald Rumsfeld before he became Secretary of Defense, signaled his strong support for the need to project force in space in order to counter presumed threats to U.S. military security there.[9] Although it stopped short of directly advocating space weapons, no one could miss the point. In late September 2001, the *Quadrennial Defense Review Report*, a wide-ranging assessment of U.S defense policy, called for beefing up military space surveillance, communications, and other applications of earth-orbiting spacecraft. It also underscored the need to deny the use of space by adversaries, and to address U.S. vulnerabilities in space with aggressive development of space capabilities.[10]

Most tellingly, the Department of Defense's *Nuclear Posture Review,* portions of which were leaked in March 2002, reportedly advocates the use of space-based assets to enhance conventional and nuclear strike capabilities.[11] In October 2002, SPACECOM merged with the U.S. Strategic Command, which controls U.S. nuclear forces, to create a single entity responsible for early warning, missile defense, and long-range strikes.[12] The Pentagon requested $1.6 billion dollars over FY 2003-2007 to develop space-based lasers and kinetic kill vehicles to intercept and destroy ballistic missiles (and to destroy satellites).[13] Providing further evidence of high-level support for the global engagement strategy, the current Bush administration's decision to

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7. W.B. Scott, *USSC Prepares for Future Combat Missions in Space,* AVIATION WEEK & SPACE TECH., Aug. 5, 1996, at 51.

8. According to Peter Teets, Under Secretary of the Air Force, "[i]f America doesn't weaponize space, an enemy will." Jack Kelly, *U.S. the Leader in War Plans for Space,* PITTSBURGH POST-GAZETTE, July 28, 2003, http://www.post-gazette.com/pg/03209/206343.stm. "The first country to put weapons in space [Lt. Col. Thomas Bell] noted, may also be the last, because it will be in a position to deny the use of space to lagging competitors." *Id.*

9. *See* COMM'N TO ASSESS U.S. NAT'L SECURITY SPACE MGMT. & ORG., FINAL REPORT (2001), http://www.space.gov/docs/fullreport.pdf.

10. *See* DEP'T OF DEF., QUADRENNIAL DEFENSE REVIEW REPORT (Sep. 2001), http://www.defenselink.mil/pubs/qdr2001.pdf.

11. *See* DEP'T OF DEF., NUCLEAR POSTURE REVIEW [Excerpts] (2001), *at* http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

12. Press Release, Dep't of Def., DoD Announces Merger of U.S. Space and Strategic Commands (June 26, 2002), *at* http://www.defenselink.mil/news/jun2002/b06262002_bt331-02.html.

13. John Steinbruner & Jeffrey Lewis, Comment, *The Unsettled Legacy of the Cold War,* DÆDALUS, Fall 2002, at 9. In November 2003, the Air Force released *The U.S. Air Force Transformation Flight Plan*, which, for the first time, offered detailed descriptions of planned antisatellite weapons. *See* U.S. AIR FORCE, THE U.S. AIR FORCE TRANSFORMATION FLIGHT PLAN (2003), http://www.af.mil/library/posture/AF_TRANS_FLIGHT_PLAN-2003.pdf. This suggests quiet movement toward deployment of weapons in space. For commentary, see Jeremy Singer, *Air Force Document Envisions Variety of Anti-Satellite Weapons*, SPACE NEWS, Mar. 2, 2004, *at* http://www.space.com/spacenews/archive04/weaponsarch_030104.html.

withdraw from the 30-year-old Anti-Ballistic Missile (ABM) Treaty[14] appeared to be less of a necessary move driven by technical demands of missile defense testing (since much testing could be done within the terms of the treaty, and deployment of a feasible system is not imminent) than a symbolic move to sweep away inconvenient legal obstacles to U.S. power projection in space.[15]

This vision of national dominance, the rest of the world, and especially China, contends, is incompatible with the established legal regime in space.[16] The international community has for over forty years repeatedly reaffirmed that space should be preserved for peaceful purposes, should be available to all, and should be weapon-free. Hence the relevant options appear to be reduced to two: an active contest over national superiority in space, or an elaborated legal regime that would undoubtedly be designed to prevent decisive predominance in space by any one country, the United States in particular.[17]

A contest over national superiority in space could extinguish the explicit equal right to use space that all nations enjoy, creating instead a de facto regime of control over access and use by the first nation to successfully deploy weapons based in space or weapons on the ground that target satellites. Given the immense value of outer space and its resources, other nations might develop their own antisatellite weapons designed to break this monopoly. Countries that lack the capabilities to build such weapons might purchase them. Space-based weapons would also generate instability due to the incentives for preemptive attack that powerful but vulnerable weapons systems seem likely to create.[18]

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14. Treaty Between the United States of American and the Union of Soviet Socialist Republics on the Limitations of Anti-Ballistic Missile Systems, May 26, 1972, U.S.-U.S.S.R., 23 U.S.T. 3435 [hereinafter ABM Treaty].

15. LISBETH GRONLUND ET AL., THE ABM TREATY AND MISSILE DEFENSE TESTING: DOES THE UNITED STATES NEED TO WITHDRAW NOW? (Union of Concerned Scientists, Working Paper, 2001), *at* http://www.ucsusa.org/global_security/missile_defense/page.cfm?pageID=559. The Bush administration announced on December 13, 2001 that it would withdraw from the ABM Treaty in six months. U.S. withdrawal took effect on June 13, 2002. The Russians view the treaty as no longer in force (although this does not mean they have plans to violate it). On June 14, 2002, the Russian Foreign Ministry issued a statement saying that Russia was no longer bound by the Treaty with the Russian Federation on Further Reduction and Limitation of Strategic Offensive Arms, Jan. 3, 1993, U.S.-Russia, S. Treaty Doc. No. 1, 103d Cong., 1st Sess. (1993) [hereinafter START II], and that "the United States withdrew from the ABM Treaty, with the result that this international legal act, which served for three decades as the cornerstone of strategic stability, has ceased to be in force." *See* Press Release, Russian Foreign Ministry, On the Legal Status of the Treaty Between Russia and the USA on Further Reduction and Limitation of Strategic Offensive Arms (June 14, 2002), *at* http://www.acronym.org.uk/docs/0206/doc06.htm.

16. *See* CHINA'S POSITION ON AND SUGGESTIONS FOR WAYS TO ADDRESS THE ISSUE OF PREVENTION OF AN ARMS RACE IN OUTER SPACE [PAROS] AT THE CONFERENCE ON DISARMAMENT (Working Paper, 2000), *reprinted in* DISARMAMENT DIPLOMACY, Jan.-Feb. 2000, http://www.acronym.org.uk/dd/dd43/43paros.htm. For an overview of the Chinese position, see Jeffrey Lewis, *International Reactions to United States Military Plans in Outer Space: The Case of the People's Republic of China* (Feb. 19, 2003), http://www.puaf.umd.edu/degree_programs/phd/Lewis.pdf.

17. As I argue later in the Article, a third option, "muddling through," will likely be unstable over the long-term and will degenerate into the first option, a contest over dominance in space. *See infra* Section II.B.

18. In a conflict, any adversary of the United States would have a strong incentive to knock out or jam U.S. satellites, on which U.S. warfighting capabilities greatly depend, as early as possible.

A more elaborated legal regime would be aimed at preventing destabilizing conflicts over the use of space. The problem posed is how to balance the interests of the United States with those of the rest of the world. The SPACECOM position, if seriously pursued, would pit the United States against everyone else, and the support of even close allies could be in question. Equally if not more important, other significant interests of the United States in space would be jeopardized if an extended battle over space superiority were to develop. Given the inherent vulnerability of space activities, traditional military support activities (including space-tracking, early warning, communications, reconnaissance, weather monitoring, and navigation) would be placed in jeopardy. The viability of commercial and scientific activities in space would come into serious question as well. In a conflict, terrestrial components of space activities could become objects of attack, while attacks against satellites could litter space with speeding debris that might rip into commercial satellites and space vehicles, disrupting commercial and scientific activity and communications on the ground.

Although SPACECOM and its supporters aggressively assert their views, advocates of space weaponry may be in the minority, even in the Pentagon. As many observers recognize, the interests of the United States in space are much broader than SPACECOM presents. U.S. testing and deployment of orbital weapons could make the use of space for other military and commercial purposes more difficult. Many in the military, especially those involved in crucial military support activities, are quietly aware of this,[19] as are officials at the National Aeronautics and Space Administration (NASA) and the International Space Station (ISS),[20] and their supporters in Congress. Congressional support for space weapons programs is sometimes difficult to assess, but does not appear to be deep or widespread.[21] Serious questions remain as to whether the threats to U.S. assets in space are really as great as

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Knowing this, U.S. leaders would have an incentive to preempt such an attack by attacking the adversary first. These mutual first strike incentives create a situation of crisis instability, heightened by the fact that the technology for attacking satellites today is relatively accessible and can be quite low-tech. For an overview of the possibilities, see MICHAEL KREPON & CHRISTOPHER CLARY, SPACE ASSURANCE OR SPACE DOMINANCE: THE CASE AGAINST WEAPONIZING SPACE? 18-24 (2003), http://www.stimson.org/wos/pdf/space1.pdf.

19. For some skeptical views from the military, see Maj. Howard D. Belote, *The Weaponization of Space: It Doesn't Happen in a Vacuum,* AEROSPACE POWER J., Spring 2000, at 46; Lt. Col. Bruce M. Deblois, *Space Sanctuary: A Viable National Strategy*, AIR POWER J., Winter 1998, at 41; David W. Ziegler, Safe Heavens: Military Strategy and Space Sanctuary Thought (1997) (unpublished M.A. thesis, The School of Advanced Airpower Studies, Maxwell Airforce Base), *at* http://www.au.af.mil/au/awc/awcgate/saas/ziegler_dw.pdf.

20. The ISS is a collaborative effort of sixteen nations, led by the United States, that includes Japan, Canada, Russia, Brazil, and the eleven nations of the European Space Agency. Its purpose is to conduct scientific research in orbit. It has been extremely costly, however, and the value of its research has been hotly disputed. *See, e.g.*, Paul Hoversten, *International Space Station: Boon to Science or Boondoggle?*, (Aug. 21, 2000), *at* http://www.space.com/news/spacestation/future_iss_000821.html.

21. Space weapons tend to be popular among Congressional conservatives, but not among Democrats or Republican moderates. In recent months, Congressional opponents of space weapons have begun to challenge the Bush administration on the issue. *See* Theresa Hitchens, *Reigning in Our Weaponry: Is U.S. Air Force Lost in Space?*, S.F. CHRON., Mar. 15, 2004, at B7; Randy Barrett, *Missile Defense: The Pentagon Steps Back*, SPACE NEWS (July 11, 2003), *at* http://www.space.com/businesstechnology/technology/missile_defense_030711.html; James Clay Moltz, Space Weapons and U.S. Politics After the War in Iraq, Remarks Before the Second Moscow International Nonproliferation Conference (Sept. 18-20, 2003), *at* http://www.ceip.org/files/projects/npp/pdf/moscow2003/cmoltz.pdf.

SPACECOM argues, and whether, even if the threats were real, expensive and difficult space-based weapons would be the most effective way to deal with them. In many cases, those wishing to hurt the United States likely will find it much easier, and more effective, to attack terrestrial targets.[22]

Overall, the risks brought on by a competition for national dominance in space would ultimately be detrimental to the United States. The United States is by far the nation most reliant on space for its military and economic well-being. It has an estimated 850 satellites, both military and commercial, in orbit—a number that is expected to increase substantially during the next ten years.[23] Although this technological and financial edge in space will grow in the short term, the United States ultimately will see that advantage diminish over time. Current U.S. space doctrine such as that articulated in *Vision for 2020* likely underestimates the speed with which the U.S. advantage as a space power will erode (although SPACECOM advocates hope to preserve this advantage through space domination).[24]

The choice between a competition for national superiority and a strengthened legal regime that preserves and balances the interests of all in space will have profound consequences. If the United States aggressively moved weaponry into space, it would likely provoke other nations to pursue countermeasures, with destabilizing consequences for global and national security. In addition, by encouraging nations who do not currently have an interest in placing weapons in space to compete directly and immediately with U.S. space-based assets, the United States would almost certainly guarantee the loss of the advantages it seeks to protect. Although an arms race in ASAT weapons is one of the dangers, the threat currently of greatest concern to states such as China and Russia is the U.S. use of space systems to augment its nuclear and conventional strategic strike capabilities. From the perspective of these nations, the U.S. decision to expand strategic capabilities into space represents the collapse of the Cold War bargain of strategic stability based on mutual vulnerability. A military competition in space could thus invigorate a high-tech arms race and renew emphasis on doctrines of nuclear warfare.[25]

Finally, a military competition in space would largely extinguish the role of law in space in favor of a regime of power. Despite the narrow organizational appeal of the latter to SPACECOM, the much broader interests of the United States in space lie in the promotion of the rule of law. The United States has a long history of supporting the rule of law both at home and in global affairs—in the latter case, promoting the development of rules that would secure U.S. interests in an interdependent world.[26] When presented

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22. *See* KARL P. MUELLER, IS THE WEAPONIZATION OF SPACE INEVITABLE? (2002), *at* http://www.isanet.org/noarchive/mueller.html; Deblois, *supra* note 19.

23. *Space Objects Box Score* (Jan. 31, 2004), *at* http://www.planet4589.org/space/logs/box0401.txt.

24. *See* LT. COL. THOMAS D. BELL, WEAPONIZATION OF SPACE: UNDERSTANDING STRATEGIC AND TECHNOLOGICAL INEVITABILITIES (Ctr. for Strategy & Tech., Maxwell Airforce Base, Occasional Paper No. 6, 1999), http://www.au.af.mil/au/awc/awcgate/cst/csat6.pdf.

25. Deblois, *supra* note 19.

26. *See* DANIEL PATRICK MOYNIHAN, ON THE LAW OF NATIONS (1990). However, as Moynihan also argues, the United States has not always practiced what it has preached with respect to the rule of law, and its commitment to international law in recent decades has been decidedly mixed.

with the choice, it is likely that most users of space—including the satellite communications industry, those involved in military support operations, and the scientific community, including NASA—would prefer the more stable protection provided by the rule of law rather than the more uncertain and potentially disruptive protection of untested and complex weapons systems. In sum, the United States and the international community have a strong interest in preventing a destabilizing military competition in space through the timely negotiation of a more elaborated legal regime for space.

A. *The Current Legal Regime*

The current legal regime in space is increasingly fragmented and inadequate to meet the challenges of the intensifying use of space. It consists of several key but very general principles expressed in five space treaties adopted since 1967[27] and a series of arms control treaties,[28] along with general international law and the practices of spacefaring nations. The legal regime also includes various agreements covering the commercial uses of space, such as rights to use the geostationary orbit, and agreements establishing intergovernmental organizations with functions in space (e.g., the International Space Station, the International Telecommunication Union, the International Civil Aviation Organization, and the World Meteorological Organization).[29] The general principles include the concept that space should be reserved for "peaceful purposes" and that it is nonappropriable. However, due to the small handful of states historically able to operate in space, these principles have not really been tested and remain largely aspirational. The definition of "peaceful" is contested and unclear, environmental protections for outer space are weak, and there is no agreed-upon operational definition of

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27. Agreement on the Activities of States on the Moon and Other Celestial Bodies, G.A. Res. 34/68, U.N. GAOR, 34th Sess., Supp. No. 46, U.N. Doc. A/34/664 (1979) [hereinafter Moon Treaty]; Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention]; Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention]; Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

28. *See* The Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, 14 U.S.T. 1313, 480 U.N.T.S. 43 [hereinafter Limited Test Ban Treaty]. Until June 13, 2002, when it expired, the ABM Treaty, *supra* note 14, banned space-based missile defense systems between the superpowers. Both the Interim Agreement Between the United States of America and the Union of Soviet Socialist Republics on Certain Measures With Respect to the Limitation of Strategic Offensive Arms, May 26, 1972, U.S.-U.S.S.R., 23 U.S.T. 3462 [hereinafter SALT I], and the Treaty on the Limitation of Strategic Offensive Arms and Protocol Thereto, June 19, 1979, U.S.-U.S.S.R., S. EXEC. DOC. Y, 96-1 (1979) [hereinafter SALT II], although primarily about arms control on land, also had an outer space component. SALT I (along with the ABM Treaty) prohibited interference with national technical means of verification (i.e., satellites). The SALT II agreement prohibited the development, testing, or deployment of weapons of mass destruction in space.

29. For information on these organizations, see *The International Civil Aviation Organization, at* http://www.icao.int (last visited May 2, 2004); *The International Space Station, at* http://www.shuttlepresskit.com/ISS_OVR/ (last visited May 2, 2004); *International Telecommunication Union, at* http://www.itu.int (last visited May 2, 2004); *World Meteorological Organization, at* http://www.wmo.ch (last visited May 2, 2004).

the concept of "province of all mankind" as used in the Outer Space Treaty.[30] This principle is not so widely accepted that it could be called a principle of customary international law.[31]

Additionally, a recurring tension exists between the communitarian principle of equal access to outer space and an entrepreneurial principle of "first come, first served." The spacefaring states have historically been concerned with optimizing the use and exploration of outer space, while non-spacefaring states have been concerned with influencing rulemaking to constrain the activities of spacefaring states and to protect their own future interests.

With regard to "peaceful uses," the current legal regime consists of a set of modest limitations regarding military activity in the vacuum of near-earth space, and complete nonmilitarization of celestial bodies such as the Moon. Space has always been militarized to some degree. Although the international community has declared that outer space should be reserved for "peaceful purposes," the space powers have interpreted this to permit "passive" or military support activities such as observation, surveillance, communications, and detection of nuclear explosions on Earth.[32] The language of the major treaties was carefully worded so as not to prohibit the passage of nuclear ballistic missiles through space.[33] From the beginning, U.S. space programs have been primarily military, not civilian or scientific, in nature.[34]

Thus, the current legal regime imposes certain important prohibitions on military activity but also leaves significant gaps. It prohibits the stationing of weapons of mass destruction, including nuclear weapons, in space.[35] However, no prohibition exists on the transit of nuclear weapons through space or the launching of nuclear weapons from Earth into space for the purpose of destroying incoming missiles (as the early U.S. and Soviet missile defense interceptors in North Dakota and around Moscow permitted under the 1972 ABM Treaty were intended to do).[36] The regime also does not explicitly prohibit ASAT weapons or the placement of conventional weapons in space.[37] U.S. termination of the ABM treaty in June 2002 removed the 30-year prohibition on space-based ballistic missile defenses for the superpowers.

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30. *See* Outer Space Treaty, *supra* note 27, art. I, 18 U.S.T. at 2412, 610 U.N.T.S. at 207. *See also* David Tan, *Towards a New Regime for the Protection of Outer Space as the "Province of All Mankind,"* 25 YALE J. INT'L L. 145, 146-48 (2000).

31. Tan, *supra* note 30, at 170-76.

32. Abram Chayes et al., *Space Weapons: The Legal Context*, *in* WEAPONS IN SPACE 193, 196-97 (Franklin A. Long et al. eds., 1986).

33. *Id.* at 196.

34. *See* Ivan A. Vlasic, *The Legal Aspects of Peaceful and Non-Peaceful Uses of Outer Space*, *in* PEACEFUL AND NON-PEACEFUL USES OF OUTER SPACE 37, 39 (Bhupendra Jasani ed., 1990).

35. *See* Outer Space Treaty, *supra* note 27, art. IV, 18 U.S.T. at 2413-14, 610 U.N.T.S. at 208.

36. On the ABM Treaty, see STANFORD ARMS CONTROL GROUP, INTERNATIONAL ARMS CONTROL: ISSUES AND AGREEMENTS 230-32 (Coit D. Blacker & Gloria Duffy eds., 2d ed. 1984).

37. Rebecca Johnson, *Multilateral Approaches to Preventing the Weaponization of Space*, DISARMAMENT DIPLOMACY, Apr. 2001, http://www.acronym.org.uk/dd/dd56/56rej.htm. For an extended discussion of the ambiguities in existing law, see Peter Jankowitsch, *Legal Aspects of Military Space Activities*, *in* SPACE LAW: DEVELOPMENT AND SCOPE 143, 143-57 (Nandasiri Jasentuliyana ed., 1992). The United States and the Soviet Union (and its successor states) have been unable to agree on an arms control agreement for antisatellite systems, despite several attempts since 1970 to do so.

Thus, under existing international law, both conventional and "exotic" weapons (such as directed energy weapons) are arguably permissible in space.[38] In short, major gaps exist in the legal regime to prevent the weaponization of space.

In addition, civilian satellites largely lack any international legal protection.[39] They can be attacked directly without causing any loss of life and without violating any existing formal legal rules. In contrast to the law for military reconnaissance aircraft, damage to civil remote sensing satellites would not necessarily be regarded as an attack on a state's national security assets, yet military services rely increasingly on civilian satellites for communications and observation.[40] In the absence of agreed-upon controls, such satellites may become objects of attack. Additionally, the laws governing the management of—and the responsibility for—space debris remain underdeveloped.[41] More than 11,000 objects more than ten centimeters wide (large enough to be continuously tracked) whiz in orbit around the earth, along with an estimated 100,000 pieces of debris between one and ten centimeters wide, and tens of millions of particles smaller than that.[42] Given the tremendous velocity of objects in orbit, even a piece of debris the size of a fleck of paint can cause serious damage to spacecraft.

In the next three sections, I briefly survey the origins and development of the space regime up to the present day with regard to the peaceful use of space. I review the analogies that helped frame the initial effort at regime creation in outer space, and the influence of both the Cold War and North-South dynamics on the shape of the regime.

1. *Origins of the Space Regime*

The current legal regime for space was shaped by a nearly universal enthusiasm in the 1950s to adopt principles for preserving space for peaceful purposes, initially interpreted restrictively to mean "nonmilitary" activity. The United States initially took this position. It was followed soon by actual state practice (by the two superpowers), which quickly established that "peaceful" included passive military means. "Peaceful" would thus be interpreted to

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38. These could be either kinetic energy weapons ("hit to kill"), which "kill" by hitting another weapon at high speed (although to increase their effectiveness they also carry chemical explosives), or directed energy weapons that destroy their target by beaming electromagnetic radiation at the speed of light. For a comprehensive discussion, see BOB PRESTON ET AL., SPACE WEAPONS: EARTH WARS 23-45 (2002).

39. *See* Bhupendra Jasani, *Orbiting Spies—Opportunities and Challenges*, 18 SPACE POL'Y 13 (2002). The ABM, SALT, and START agreements prohibit deliberate interference with "national technical means" (i.e., satellites used to monitor treaty compliance), but these treaties apply (or applied when they were in force) only to the United States and Russia. *See* SALT II, *supra* note 28; SALT I, *supra* note 28; ABM Treaty, *supra* note 14. However, the Treaty on Conventional Forces in Europe borrows and extends this provision to *multinational* technical means. *See infra* note 84.

40. I discuss this in greater detail later in the Article. *See infra* note 128 and accompanying text.

41. *See generally* Ram S. Jakhu, *Space Debris in the Geostationary Orbit: A Major Challenge for Space Law*, 17 ANNALS OF AIR & SPACE L. 313 (1992).

42. NASA Orbital Debris Program Office, *Orbital Debris Frequently Asked Questions*, *at* http://sn-callisto.jsc.nasa.gov/faqs.html (last visited Mar. 24, 2004).

mean "non-aggressive." Although much of the developing world objects to this interpretation, and prefers to read "peaceful" as meaning "nonmilitary," no state has ever *formally* protested the passive military uses interpretation, as would be required to prevent a rule of customary international law from taking hold.[43]

The use of space for passive military activities was encouraged by superpower perceptions of a close relation between military activity in near-earth space and on Earth. The military use of space was driven initially in the 1950s by U.S. interest in satellite reconnaissance capabilities. The Soviet Union, behind in satellite technology (although ahead in launch technology), initially opposed the use of space for satellite reconnaissance on the grounds that satellites orbiting overhead would violate sovereignty by intruding upon a country's airspace and therefore were not "peaceful." Once it recognized the benefits of this capability and developed its own satellites, however, the Soviet Union eventually accepted the U.S. interpretation that "peaceful" should mean "non-aggressive." The initial round of negotiations on military activity in space, from 1957 through late 1966, thus resulted in a set of rules (including nonmilitarization of celestial bodies and modest arms control measures in near-earth space) that conformed closely to the superpowers' existing preferences.[44] The use of satellite surveillance for monitoring U.S.-Soviet arms control agreements was a significant breakthrough in arms control and proved to be an important benefit.[45]

2. *Three Analogies for Outer Space*

Much of the initial effort at regime creation in outer space was framed by three analogies—to airspace, the high seas, and Antarctica. As M.J. Peterson has shown, each of these analogies suggested a distinct approach to the regulation of space.[46] The air and high seas analogies implied treating outer space as open to forms of military activity accepted under general international law, while the Antarctic analogy suggested treating outer space as off-limits to all military activity.[47] Because these analogies continue to influence arguments about the regulation of space, it is important to understand their contribution to the development of the current regime.

The *airspace analogy* supported notions of state control over all activity above a state's territory. It implied that the same rules regarding military activity that prevailed within a state's own domain, including its airspace, should be applied to outer space. These rules included the right to construct and maintain weapons and armed forces, and to use armed force against

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43. BIN CHENG, STUDIES IN INTERNATIONAL SPACE LAW 515-16, 528-29 (1997); Vlasic, *supra* note 34, at 38-42, 44-45.

44. M.J. Peterson, International Regimes for the Final Frontier 146-76 (June 2001) (unpublished manuscript, on file with The Yale Journal of International Law) [hereinafter Peterson, International Regimes for the Final Frontier]. I thank the author for sharing this manuscript.

45. STANFORD ARMS CONTROL GROUP, *supra* note 36, at 221-22, 252.

46. M.J. Peterson, *The Use of Analogies in Developing Outer Space Law*, 51 INT'L ORG. 245, 252-60 (1997) [hereinafter Peterson, *The Use of Analogies*]. Peterson traces how analogies to air, the high seas, and Antarctica were used by negotiators in the 1950s to frame the issue of space.

47. *Id.*

unauthorized intruders in self-defense. For example, military aircraft intruding upon national airspace could be shot down (whereas civilian aircraft could be escorted or forced to land).[48] The Soviet Union initially supported this analogy in the 1950s, but eventually shifted to the high seas analogy after developing reconnaissance satellite capabilities in the 1960s.[49]

The *high seas analogy* supported treating outer space as a commons, an area open to use by all states for the full range of military purposes accepted under international law. States were free to send warships out on the high seas, limited by the general U.N. Charter rules governing the use of force between states.[50] States could also send out military patrols, carry out military maneuvers, and conduct weapons tests so long as these would not interfere with other states' freedom on the high seas. They did not have the right, however, to shoot down foreign reconnaissance aircraft flying above the high seas, even if these aircraft were flying high enough to permit observing or photographing portions of the state's territory.[51]

The *Antarctic analogy*, available after the conclusion of the Antarctic Treaty in 1959,[52] suggested the nonmilitarization of an entire area. The treaty stated that Antarctica shall be used "for peaceful purposes only," and defined this to mean a prohibition on all military activities.[53] As Peterson explains, "[t]his entailed far more comprehensive limitations than prevailed within state domain or on the high seas, banning even forms of military activity regarded as defensive under the [U.N.] Charter . . . ."[54]

When space law was first being developed in the 1950s, the United States, many other countries, and most international lawyers supported the high seas analogy.[55] The decision to apply the notion of the commons to outer space—making space nonappropriable—effectively ruled out the state domain option (the airspace analogy), which the Soviet Union at first supported. The choice between U.N. Charter rules (permitting the right of self-defense, and thus some military activity) and nonmilitarization remained, however, and this decision came only with the selection of the high seas analogy.[56] The high seas analogy has remained firmly in place up to now.

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48. Peterson, International Regimes for the Final Frontier, *supra* note 44, at 146-47.

49. Peterson, *The Use of Analogies*, *supra* note 46, at 255. Note that the airspace analogy is at best impractical because, except for Brazil and a few other countries on the Equator that can take advantage of the geostationary orbit (which circles above the Equator), the laws of physics prevent any nation from maintaining satellites only over its own territory.

50. R.R. CHURCHILL & A.V. LOWE, THE LAW OF THE SEA 276 (1983); Jankowitsch, *supra* note 37, at 145.

51. Peterson, International Regimes for the Final Frontier, *supra* note 44, at 147-48.

52. Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71.

53. *Id.* art. 1, 12 U.S.T. at 795, 402 U.N.T.S. at 72.

54. Peterson, International Regimes for the Final Frontier, *supra* note 44, at 148.

55. Peterson, *The Use of Analogies*, *supra* note 46, at 253-54.

56. CHENG, *supra* note 43, at 525; Peterson, International Regimes for the Final Frontier, *supra* note 44, at 147-48. In 1976, eight equatorial states claimed sovereignty over portions of the geostationary orbit, 22,000 miles above the earth. They argued that the norm of nonappropriability perpetuated the space powers' unfair advantage in space. This claim has been rejected by all the major spacefaring powers. Marietta Benkö & Willem De Graaff, *Questions Relating to the Definition/Delimination of Outer Space and Outer Space Activities and the Character of the Geostationary Orbit*, *in* MARIETTA BENKÖ ET AL., SPACE LAW IN THE UNITED NATIONS 121, 137-38 (1985).

With regard to the Moon, however, governments and international lawyers soon came to perceive the weaknesses of the high seas analogy and found the Antarctic analogy (i.e., complete demilitarization) more appropriate. Many of the characteristics of the Antarctic—its remoteness, the difficulty of the physical environment, and the perceived lack of advantage associated with military facilities—also applied to the Moon and other celestial bodies (though not to the intervening vacuum of space). These factors, along with a desire on the part of the United States and the Soviet Union to contain their rivalry and to keep others out, appear to have been critical in reaching agreement not to militarize the Antarctic.[57] Similar considerations suggested the relevance of the Antarctic analogy for the Moon, ultimately facilitating agreement on its nonmilitarization.[58]

These three analogies to airspace, the high seas, and Antarctica helped to shape the initial creation of the space regime, and the latter two continue to influence arguments about the regulation of space. I now turn to the subsequent development of the space regime.

3. *The North-South Context*

Although East-West dynamics influenced many of the early agreements on space, by the mid-1970s, as the economic benefits of space became more evident, North-South dynamics became much more prominent.[59] In 1979, the international community concluded negotiations on the Moon Treaty.[60] The initial impulse for negotiations stemmed from the desire of the superpowers to avoid political-military conflicts regarding the Moon. However, efforts by the Group of 77 nonaligned nations to extend the "common heritage of mankind" principle (borrowed from the LOS Convention's deep seabed regime) to the Moon soon dominated discussions. This principle involved notions of managing use of the resources of the Moon and other natural bodies in space by a global intergovernmental organization for the benefit of all. Though a multilateral treaty was written, only ten states have ratified it,[61] suggesting little support for this principle as the core of a strengthened management regime. Although the common heritage principle introduces notions of equity into space law, in practice the proposed regime for harvesting the Moon's resources is "even more hypothetical than that for the deep seabed, making the

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57. Peterson, *The Use of Analogies*, *supra* note 46, at 257-58. According to Deborah Shapely, the only real reason the United States felt it had to establish a military presence in the Antarctic was to make sure the Soviets did not. Once it was evident that the Soviets would support nonmilitarization, an agreement was quickly reached. Deborah Shapley, *Antarctica: Why Success?*, *in* U.S.-SOVIET SECURITY COOPERATION: ACHIEVEMENTS, LESSONS, FAILURES 207, 327-28 (Alexander George et al. eds., 1988) [hereinafter U.S.-Soviet Security Cooperation]. *See also* CHRISTOPHER JOYNER, GOVERNING THE FROZEN COMMONS: THE ANTARCTIC REGIME AND ENVIRONMENTAL PROTECTION 54-56 (1998). There is an interesting parallel here with SPACECOM's claim, however disingenuous, that the United States has to establish a military presence in space to prevent another nation from doing so first.

58. Peterson, *The Use of Analogies*, *supra* note 46, at 257-60.

59. Peterson, International Regimes for the Final Frontier, *supra* note 44, at 21.

60. Moon Treaty, *supra* note 27.

61. Office for Outer Space Affairs, United Nations Office at Vienna, *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, *at* http://www.oosa.unvienna.org/SpaceLaw/moon.html (last visited Apr. 27, 2004).

discourse all the more ideological due to its abstraction from present reality."[62] Nonetheless, the common heritage principle retains significant political support and is important symbolically, making it politically necessary to pay attention to in any elaborated regime for space.

Beginning in 1978, efforts were made to amend the Outer Space Treaty[63] by adopting additional limitations on military applications of space technology or by extending the prohibition on military activity from the Moon and other celestial bodies to near-earth space. In March 1977, the United States and the Soviet Union agreed to discuss prohibiting or severely limiting the use and deployment of ASAT weapons in space. In three negotiating sessions from June 1978 to June 1979, they made substantial progress, and agreement on a moratorium on ASAT weapons seemed close. Unresolved problems included the definition of ASAT-related activities, and the Soviet demand to include the U.S. space shuttle program in the proposed moratorium because of its supposed residual ASAT capability. However, "[c]ompromise proved impossible."[64] Although a fourth round of talks was expected, after June 1979 the Carter administration put further talks on hold in order to give priority to ratification of the SALT II treaty.[65] "Following the [Soviet] invasion of Afghanistan in December 1979, the ASAT negotiations, like the SALT treaty, fell victim to the new chill in U.S.-Soviet relations."[66] In 1980, the Soviets resumed their ASAT tests.[67] In the early 1980s, the Soviets proposed several initiatives on ASAT arms control, but the Reagan administration, then pursuing the Strategic Defense Initiative, showed little interest. The bilateral ASAT talks between the United States and Russia are still formally in suspension.

The ASAT issue was first taken up for multilateral consideration by the Geneva-based Committee on Disarmament in the context of measures to prevent an arms race in outer space.[68] In recent years, delegates to the Conference on Disarmament (CD), the successor organization to the Committee on Disarmament,[69] have proposed a variety of initiatives: additional protocols to existing agreements; universal adherence to existing agreements; new treaties to ban the development and deployment of specific weapons in space; a comprehensive international regime outlawing any military use of outer space; a strengthening of technical verification to ensure

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62. THOMAS FRANCK, FAIRNESS IN INTERNATIONAL LAW AND INSTITUTIONS 400 (1995). The common heritage principle has been applied so far only to areas where profitable exploitation of resources is not yet nor forseeably feasible (as in the extraction of manganese from the deep seabed).

63. Outer Space Treaty, *supra* note 27.

64. STANFORD ARMS CONTROL GROUP, *supra* note 36, at 122.

65. SALT II, *supra* note 28.

66. Steven Weber & Sidney Drell, *Attempts To Regulate Military Activities in Space*, *in* U.S.-SOVIET SECURITY COOPERATION, *supra* note 57, at 373, 408.

67. *Id.* at 409.

68. STANFORD ARMS CONTROL GROUP, *supra* note 36, at 122-23.

69. The Conference on Disarmament was established in 1979 as "the single multilateral disarmament negotiating forum of the international community." U.N. Office at Geneva, *Conference on Disarmament: Overview*, *at* http://www.unog.ch/disarm/disconf.htm (last visited May 2, 2004). "It succeeded other Geneva-based negotiating fora, which include the Ten-Nation Committee on Disarmament (1960), the Eighteen-Nation Committee on Disarmament (1962-68), and the Conference of the Committee on Disarmament (1969-78)." *Id.*

compliance with agreements; and a growing emphasis on confidence-building as an important means for ensuring the peaceful uses of outer space.[70] Although some measures have been undertaken, most significant initiatives have been blocked, generally by the United States. In opposing strengthened arms control measures in space, the United States insists that there is no danger of an arms race in space, and that existing treaties banning the stationing of weapons of mass destruction in space are sufficient. Given the widespread use of space for surveillance and communication, the banning of all military activity in space is, in any case, a wholly impractical option.

For the last five years, the sixty-six-member CD has been unable to conduct any negotiations at all because of a deadlock between the United States and the rest of the members over whether the CD should negotiate an agreement to prevent an arms race in outer space.[71] In June 2001, China submitted a draft treaty to prevent the testing, deployment, or use of any weapons in outer space, leaving no doubt that the draft was targeted at U.S. plans for missile defense and enhanced space capabilities.[72] The United States staunchly opposed it.[73] In June 2002, Russia and China submitted their first-ever joint proposal to the CD for an international treaty to ban space weapons.[74] Recent statements by U.S. officials suggest that the U.S. position on the issue has hardened, if anything.[75]

Thus, the international community appears to have reached an impasse over the future of space. Time and technology do not stand still, however. If conscious choice fails to determine the future of space, it will be determined by default. Still, as the forty-year history of U.S. restraint with regard to space weapons shows, the weaponization of space is not a matter of technological determinism. More accurately, it is a development being pushed by SPACECOM and its supporters with hardly any opposition from, or even scrutiny by, U.S. political leaders. It is now useful to consider what some future options for space might be.

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70. *See* PERICLES GASPARINI ALVES, UNITED NATIONS INSTITUTE FOR DISARMAMENT RESEARCH, PREVENTION OF AN ARMS RACE IN OUTER SPACE: A GUIDE TO THE DISCUSSIONS IN THE CONFERENCE ON DISARMAMENT (1991); Donald Sinclair, *Outer Space: The Conference on Disarmament Dimension*, *in* ARMS CONTROL AND THE RULE OF LAW: A FRAMEWORK FOR PEACE AND SECURITY IN OUTER SPACE 29, 29-33 (J. Marshall Beier & Steven Mataija eds., 1998) [hereinafter ARMS CONTROL AND THE RULE OF LAW].

71. *See* Press Release, United Nations, Conference on Disarmament Concludes 2003 Session, U.N. Doc. DCF/430 (Sept. 9, 2003), *at* http://www.acronym.org.uk/docs/0309/doc01.htm.

72. *See* Delegation of China, *Working Paper—Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space*, U.N. Doc. CD/1645 (2001).

73. Wade Boese, *CD Ends Year Without Negotiations*, ARMS CONTROL TODAY, Oct. 2002, at 31.

74. *See* Delegations of China, the Russian Federation, Vietnam, Indonesia, Belarus, Zimbabwe and Syria, *Working Paper—Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects* (June 27, 2002), *at* http://www.acronym.org.uk/docs/0206/doc10.htm.

75. *See* Ambassador Eric Javits, U.S. Permanent Representative to the CD, Remarks to the Conference on Future Security in Space (May 29, 2002), *at* http://www.us-mission.ch/press2002/0529javitssecurityinspace.html.

B. *Three Scenarios for the Future*

There are three alternative scenarios for the future of space: U.S. national dominance, "muddling through," or a more elaborated normative regime including treaties and specific operational rules.

U.S. space dominance. In this scenario, the United States, through power politics, imposes and enforces rules for outer space as it sees fit. This could include the possibility of stationing weapons in space. This scenario extends the model of the 1950s and 1960s, when the two superpowers, the only spacefaring nations at the time, effectively wrote the rules of space through their actions.[76] In this scenario—to use a favored analogy of its supporters—the United States, through its immense technological capabilities, dominates space the way Britain dominated the high seas a hundred years ago.[77] Taking advantage of the vastly asymmetrical distribution of power in space, the United States enforces and defends a hegemonic order that promotes U.S. interests and defends U.S. freedom of action. Its essence is a monopoly on space and denial of others' access to it. It is aimed at using outer space to achieve strategic objectives on the ground, and it favors aggressive interpretation of the traditional legal principle that anything not expressly prohibited is implicitly permitted. International treaties and negotiations are not seen as particularly relevant, necessary, or even desirable for securing an order in outer space, while the most extreme views boldly advocate sweeping away even the existing law as an unwelcome constraint on the projection of power and the assertion of sovereignty in space.[78] This is largely the view of SPACECOM and its supporters.

Muddling through. In this scenario, the international community continues its current practice of operating under diverse interpretations of nominally shared but vaguely specified principles, seeking incremental modifications to the existing regime where it can. The legal regime is shaped largely by unilateral interpretation of general principles combined with informal rules of the road.[79] Rule creation in this scenario is ad hoc, incremental, and piecemeal. The process continues to reflect traditional dominant norms of freedom of exploitation of space. Negotiations continue to

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76. Peterson, International Regimes for the Final Frontier, *supra* note 44, at 146-52.

77. *See infra* note 138 and accompanying text.

78. According to SPACECOM, "[d]ue to the importance of commerce and its effects on national security, the United States may evolve into the guardian of space commerce—similar to the historical example of navies protecting sea commerce." VISION FOR 2020, *supra* note 5, Control of Space. There are serious flaws in the Pax Britannica analogy, as I discuss further below. *See* infra notes 212-216 and accompanying text. One advocate of U.S. dominance suggests that the United States develop a Monroe Doctrine for space. *See* STEVEN LAMBAKIS, ON THE EDGE OF THE EARTH: THE FUTURE OF AMERICAN SPACE POWER 275 (2001). Everett Dolman argues that the United States should "declare that it is withdrawing from the current space regime and announce that it is establishing a principle of free-market sovereignty in space." EVERETT C. DOLMAN, ASTROPOLITIK: CLASSICAL GEOPOLITICS IN THE SPACE AGE 157 (2001). The United States should also "at once seize military control of low-Earth orbit." *Id.* This would be "for all practical purposes a police blockade of all current spaceports . . . ." *Id.*

79. For a U.S. statement expressing satisfaction with current "rules for the road" in space, see Kenneth Hodgkins, Statement to the 56th Session of the U.N. General Assembly on Agenda Item 86: International Cooperation in the Peaceful Uses of Outer Space in the Fourth Committee (Oct. 23, 2001), http://www.state.gov/g/oes/rls/rm/5791.htm.

be dominated by states, and to take place (or fail to take place, as it were) in the traditional fora. The United States does not aggressively pursue dominance of outer space, but neither does it support an effort at comprehensive rulemaking. This scenario is nominally the current official position of the United States, which maintains that the existing legal regime for space is entirely adequate and that U.S. military plans for space pose no threat to other nations.[80]

A more elaborated normative regime. In this approach, the international community attempts to negotiate rules to ensure that commercial, security, and scientific interests in space are secured. It emphasizes international cooperation among all parties with an interest in space, and widespread participation in decisionmaking and rulemaking regarding space, including by non-state actors. Rules, which would eventually need to be embodied in treaties, would be designed to prevent the predominance of any single power in space. This approach would require a shift away from an operational regime based largely on a freedom of the seas analogy to one based more on principles of comprehensive security, equal protection in space, and equity in the use of space resources. Such an approach may well be favored by a majority of states (excepting, at the present time, the United States), including both spacefaring and non-spacefaring nations.

For several reasons, the first two scenarios are unlikely to lead to stable outcomes. As discussed earlier, U.S. efforts at space dominance will likely inspire other countries to pursue countermeasures to offset U.S. capabilities, thus risking a never-ending search for security in space that will leave all actors worse off. Some advocates of space weaponization argue that others will be deterred from responding to U.S. deployment of space weapons for fear of a U.S. counterattack, or out of a conviction that there is no point competing because the United States will always be ahead.[81] But proponents of this view have so far offered little explanation of how or why this would be the case. Instead, given the vast U.S. dependence on satellites, other countries merely have to pursue an "asymmetric warfare" strategy of building antisatellite weapons, and there are multiple and relatively easy ways to do this.[82] Because of this, dominance will be very hard to achieve, and will also have adverse consequences for the United States—including alienating allies,

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80. In a speech on May 29, 2002, the chief U.S. negotiator at the Conference on Disarmament referred to other nations' concerns about an arms race in space as "groundless." He stated, "[w]e believe that this existing multilateral arms control regime adequately protects states' interests in outer space and does not require augmentation. There simply is no problem in outer space for arms control to solve." Javits, *supra* note 75.

81. According to Dolman:

> [I]f the United States were willing to deploy and use a military space force that maintained effective control of space, and did so in a way that was perceived as tough, non-arbitrary, and efficient, other states would quickly realize that they had no need to develop space military forces. It would serve to discourage competing states from fielding opposing systems.

DOLMAN, *supra* note 78, at 159. In his view, the U.S. ability to deny others military access to space "makes the possibility of large-scale space war and or [sic] military space races less likely, not more." *Id.*

82. *See* KREPON & CLARY, *supra* note 18, at 5-27.

pushing Russia and China closer together, and placing at risk other U.S. interests in space.[83]

Legal possibilities for interference with U.S. space ambitions are also quite extensive. States party to the 1990 Treaty on Conventional Armed Forces in Europe[84] could take action on the basis of treaty provisions prohibiting interference with national and multinational technical means of verification (e.g., observation satellites).[85] The 1972 Liability Convention[86] and Article VII of the Outer Space Treaty[87] make parties that launch objects into space liable for damage to the property of another treaty party. Article IX of the Outer Space Treaty provides for consultations if any treaty party believes an activity planned by another treaty party would cause "potentially harmful interference with activities in the peaceful exploration and use of outer space."[88] The U.N. General Assembly (GA) could request an Advisory Opinion from the International Court of Justice as to the interpretation of "peaceful uses" if the United States moved forward with space-based weapons components of missile defense. The GA could also pass a resolution issuing an interpretation that the U.S. stationing of weapons in space violates the "peaceful uses" provisions of the Outer Space Treaty. It is also possible that legal action could be taken in U.S. courts by U.S. commercial users of space satellites if these satellites were endangered by U.S. space weapons.[89] Diplomatic and legal actions directed at the United States on the basis of these provisions could have a substantial nuisance value for the United States, especially if developing countries were to mobilize behind such actions.

The "muddling through" scenario is also unlikely to lead to a stable outcome. It is, in any case, more a default possibility than a policy option that can be coherently defended. It is unlikely to balance adequately the variety of interests in space, leading to a less coherent and durable regime than would result from a more comprehensive effort at rulemaking. Most importantly, it involves a substantial risk that the current legal regime will collapse if not assertively defended. An analogy of sorts is provided by the incremental militarization of airspace after World War I. As Jack Hitt notes,

> [t]he Air Force began as a wing of the Army, flying over enemy territory and providing surveillance. Then the pilots began shooting one another down; later they started to drop bombs. Space can be seen as undergoing the same process, progressing out of its current stage as an arena of surveillance to microsatellites attacking other satellites to, finally, space-based lasers aiming down at fighter jets to blast them from the sky.[90]

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83. Michael Krepon, *Lost in Space*, FOREIGN AFF., May/June 2001, at 3.

84. Treaty on Conventional Armed Forces in Europe, Nov. 19, 1990, 30 I.L.M. 1, *available at* http://www.osce.org/docs/english/1990-1999/ote/cfetreate.htm [hereinafter CFE Treaty].

85. The CFE Treaty provides that a state party shall not interfere with national or multinational technical means of verification. *Id.* art. XV, 30 I.L.M. at 20. In this case, action would take the form of bringing the issue before the Joint Consultative Group, now under the umbrella of the Organization for Security and Cooperation in Europe.

86. Liability Convention, *supra* note 27.

87. Outer Space Treaty, *supra* note 27, art. VII, 18 U.S.T. at 2415, 610 U.N.T.S. at 209.

88. *Id.*, art. 9, 18 U.S.T. at 2416, 610 U.N.T.S. at 209-10.

89. *See* Jonathan Dean, *Future Security in Space: Treaty Issues*, INESAP INFORMATION BULLETIN No. 20 (Int'l Network of Eng'rs & Scientists Against Proliferation), Aug. 2002, http://www.inesap.org/bulletin20/bul20art03.htm.

90. Jack Hitt, *Battlefield: Space*, N.Y. TIMES, Aug. 5, 2001, § 6 (Magazine), at 62.

This is a troubling scenario to many, but it is a likely one if the current legal regime is allowed to stagger along without significant reinforcement. Supporters of weapons in space use this analogy to argue that Americans (and others) will eventually grow comfortable with the use of space for increasingly aggressive purposes.[91] This hypothesis could possibly be true, but, for reasons discussed further below, increased comfort with space weaponization is probably less likely than its supporters hope.[92] Even if this comfort were obtainable, it is not inherently desirable. Achieving a "comfort level" with space weapons—if such is possible—will likely come at a very high price.

It might be argued that "muddling through" is inevitably a common feature of law-creating processes, as states continuously adapt rules to new conditions, and that it can give rise to the increased rule of law. This may be true. However, in this case the "muddling through" scenario is more likely a recipe for the slow death of the space regime than a viable policy choice for the long haul. A more elaborated normative regime offers the best prospect for securing a stable order in space that preserves security and stability for all. That said, the interests in space are diverse and complex, and some of the parties, such as those tied to defense industries, may have little interest in keeping space free of weapons. The remainder of this Article lays out some of the considerations that will need to be taken into account in thinking about the content of, and strategies for developing, a more robust regime.

C. *Actors in Space and Their Interests*

Any future legal regime must take into account certain features of space as an issue area. Most importantly, the creation of regimes for space activity has been shaped from the start by the highly unequal distribution of power and capabilities to exploit space. While the Soviet-American duopoly long dominated space activities, today more than thirty countries possess significant space industries and eight countries provide launch services.[93] The Russians and Americans, with the recent addition of the Chinese, are the

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91. *See* LAMBAKIS, *supra* note 78, at 256, 278, 286. According to SPACECOM,

> [t]he emergence of space power follows both of these [the evolution of land power and air power] models. Over the past several decades, space power has primarily supported land, sea, and air operations . . . . During the early portion of the 21st century, space power will also evolve into a separate and equal medium of warfare.

VISION FOR 2020, *supra* note 5, A Historic Perspective—the Evolution of Space. This will be facilitated by development of "a new generation of agreements and treaties" that will "normalize space operations." U.S. SPACE COMMAND, *supra* note 1, ch. 5. The United States should "shape the international community to accept space-based weapons to defend against threats in accordance with national policy." *Id.* at ch. 11. Gray and Sheldon argue that what is needed most urgently today is "a relatively mundane understanding" of the space environment as "yet another environment for conflict." Colin S. Gray & John B. Sheldon, *Spacepower and the Revolution in Military Affairs: A Glass Half-Full*, *in* SPACEPOWER FOR A NEW MILLENNIUM 239, 247 (Peter Hays et al. eds., 2000).

92. Many people remain uncomfortable with nuclear weapons, after all, and the distaste for nuclear deterrence has grown, not diminished, over the years. *See, e.g.*, THOMAS GRAHAM, AMERICAN PUBLIC OPINION ON NATO, EXTENDED DETERRENCE, AND THE USE OF NUCLEAR WEAPONS: FUTURE FISSION? (Occasional Paper No. 4, 1989).

93. Peterson, International Regimes for the Final Frontier, *supra* note 44, at 21.

major spacepowers capable of a full range of space activity. An additional five states or regional entities (Europe, France, India, Israel, and Japan) are capable of launching satellites and other objects, but not manned space vehicles, into space.[94] Finally, a larger group of nations, along with three private companies and one intergovernmental organization, possess significant space capabilities in narrow areas, but are dependent, in one or more critical areas, on other nations to achieve the benefits of space. Many in this group build and operate objects launched for them by one of the launching states.[95] Finally, also involved in space are a large number of private firms based in industrial states.

The major change in the exploitation of space over the decades is the large increase in commercial interest. International space activity has moved increasingly toward practical applications for commercial markets, though scientific research stills plays a major role. The number of commercial space launches began to outpace military launches in 1998.[96] Telecommunications, remote sensing and Geographic Information Systems (GIS), and Global Satellite Navigation Systems (GSNS) are rapidly becoming significant commercial applications. They have uses in environmental studies (e.g., global observation, climate change and land use analysis, and disaster management planning) and communications services (e.g., broadcasting, communication, and navigation). According to some studies, there will be between 262 and 313 communications satellites in geostationary orbit by 2006.[97] There are also numerous commercial spin-offs such as secondary applications of space technology. The manufacture of launch vehicles has been developed into a lucrative industry to meet the needs of satellite operators. It is estimated that the commercialization of space has already generated $90 billion worth of revenues, a figure that, before the collapse of a large part of the telecommunications industry in 2000, was growing at an annual rate of twenty percent. Pre-2000 estimates of the satellite launch market suggested it would generate more than $45 billion over the period 1998-2007.[98] These figures have now undoubtedly been revised downward.

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94. *Id.*

95. This group includes South Africa, Canada, Brazil, Argentina, Australia, Germany, Indonesia, and the United Kingdom. INTELSAT (International Telecommunications Satellite Organization) was established as an intergovernmental organization in 1964, but became a private company in 2001. *See* INTELSAT, *at* http://www.intelsat.com/aboutus/ourhistory/ (last visited May 1, 2004). INMARSAT was similarly transformed from an intergovernmental organization to a limited company in 1999. *See* INMARSAT, *at* http://www.inmarsat.com (last visited May 1, 2004). COMSAT is a private corporation operating in Latin America, *see* COMSAT, *at* http://www.comsatinternational.com/about/index.html (last visited May 1, 2004), while ARABSAT (Arab Satellite Communications Organization) is an intergovernmental organization providing satellite services in the Arab world. *See* ARABSAT, *at* http://www.arabsat.com/about_us/index.asp (last visited May 1, 2004). Many states without space technology themselves participate selectively in satellite enterprises such as INTELSAT, while an ever diminishing number of states are not involved with space in any way. Freleigh J.F. Osborne, *Outer Space and Multilateral Security: Current Trends and Possibilities*, *in* ARMS CONTROL AND THE RULE OF LAW, *supra* note 70, at 4, 4-6.

96. *See, e.g.*, Hitt, *supra* note 90, at 32.

97. U.N. Office of Outer Space Affairs, *Commercial Benefits and Spin-Offs from Space*, *at* http://www.oosa.unvienna.org/unisl-3/bginfo/spin.htm (last visited Mar. 24, 2004).

98. U.N. Office of Outer Space Affairs, *The United Nations, Private Enterprise and Space*, *at* http://www.oosa.unvienna.org/unisl-3/bginfo/private.htm (last visited Mar. 24, 2004).

Thus, an increasing number of states operate remote sensing on a commercial basis. For example, Canada, France, India, Israel, and Russia, in addition to the United States, all have built their own satellites and the data from them are sold commercially.[99] Economic power in space remains concentrated in North America, however. North America's share of the top fifty companies in terms of space revenues has been relatively stable at around 75 percent, with Europe at around 20 percent and Asia at around 6 percent.[100] "Of the 1000 active satellites currently in orbit, about an eighth belong to the U.S. military, and that percentage will diminish by the end of the decade, when experts estimate that operating satellites in space will reach 2000."[101] Well over 300 of the 2959 total (active and inactive) satellites in orbit in January 2004 were operated by international organizations or private corporations.[102] During the 1991 Persian Gulf War, about 25 percent of U.S. military communications was provided over commercial satellite systems, a number that grew to 85 percent in the 2003 war against Iraq.[103] As one military writer noted, "[o]ne day we may find ourselves defending against armed attacks supported by commercial satellite companies, possibly even the same companies supporting our forces."[104]

The various actors in space have different and sometimes competing interests and these will influence the type of operational norms and rules that states are likely to agree on in any negotiation for a more comprehensive regime.

States. The Indian and Chinese space programs, like those of the Soviet Union and the United States four decades ago, are by-products of missile development that are meant to show off technological prowess. Both India and China have ambitions to become serious space powers. India launched its first test rocket in 1963, and took its first step as a commercial satellite launcher in 1999, putting South Korean and German satellites into orbit. With the launch in April 2001 of its Geosynchronous Satellite Launch Vehicle, designed to put broadcasting and communications satellites into geostationary orbit, India has joined the few countries that can launch lucrative, heavyweight satellites deep into space. Developing its own rocket technology has boosted its technological reputation,[105] and India plans to send an unmanned mission to the Moon by 2007 or 2008.[106]

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99. LINDA L. HALLER & MELVIN S. SAKAZAKI, COMMERCIAL SPACE AND UNITED STATES NATIONAL SECURITY, *at* http://www.fas.org/spp/eprint/article06.html.

100. *Space News Top 50: 2003*, SPACE NEWS *at* http://www.space.com/spacenews/top50_2003.html (last visited Apr. 28, 2004).

101. Hitt, *supra* note 90, at 32.

102. *Space Objects Box Score*, *supra* note 23. *See also* Maj. David L. Willson, *An Army View of Neutrality in Space: Legal Options for Space Negation*, 50 A.F.L. REV. 175, 181 (2001).

103. BOB PRESTON, PLOWSHARES AND POWER: THE MILITARY USE OF CIVIL SPACE 132 (1994); Andrew Bridges, *Pentagon Turns to Commercial Satellites to Ease Wartime Data Squeeze*, ASSOCIATED PRESS, Mar. 28, 2003, http://www.govtech.net/news/news.php?id=45152.

104. Willson, *supra* note 102, at 180. INTELSAT, an international treaty organization providing services to over 125 member countries, which was privatized in 2001, moved its satellites into position in order to support coalition forces during the 1991 Gulf War.

105. *Runners Up in the Space Race*, ECONOMIST, Apr. 14, 2001, at 73.

106. David Rohde, *India's Lofty Ambitions in Space Meet Earthly Realities*, N.Y. TIMES, Jan. 24, 2004, at A3.

China also has lofty ambitions, and the potential for military space capabilities. The Chinese space program began in 1970 with the launch of a satellite on a Chinese-built rocket. With its Long March rockets, China is capable of launching anything from small experimental satellites to large telecommunications satellites. In October 2003, it achieved its first manned mission in space, with the long-term goal of establishing a manned space station.[107] Although some observers suggest this project has a military aspect, it is likely that China is pursuing the manned space program mostly for the prestige benefits (just as the Soviet Union and the United States did earlier), because manned programs do not offer significant military advantages over unmanned ones. China has had a photo imaging capability from space for about twenty years. It does not have a publicly identified dedicated antisatellite effort, although it is widely suspected of pursuing research on such capabilities. Existing launch capabilities could provide the basis for developing such a system.[108] China has been highly intent on constraining U.S. missile defenses and the weaponization of space, both seen as threats to its own small deterrent force.[109]

Europe's space program is driven by commercial rather than military ambitions. The European Space Agency mostly concentrates on communications technology, earth observation, and space science.[110] No evidence exists for any real enthusiasm among European nations to develop active space-based weapons systems.[111]

Finally, Japan's program is somewhere in between those of Europe and the more ambitious space powers. Japan's rocket program has been commercially uncompetitive in recent years.[112] After a string of failed launches, Japan began a complete reorganization of its space program in 2000.[113] It has been more successful on the scientific front, in 1998 sending a probe to Mars that will search for water.[114] Japan's H2 rocket has potential military uses, and the launch of its first spy satellites into orbit in March 2003 raised concerns in the region.[115] However, Japan's constitutional prohibition against offensive military capabilities, which restrains its defense spending, suggests that it has little inclination to weaponize space.[116]

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107. Jim Yardley, *China Sends a Man into Orbit, Entering the U.S.-Russian Club*, N.Y. TIMES, Oct. 15, 2003, at A1.

108. Federation of American Scientists Space Policy Project, *Chinese Anti-Satellite (ASAT) Capabilities*, *at* http://www.fas.org/spp/guide/china/military/asat (last visited Mar. 24, 2004).

109. Jim Yardley & William J. Broad, *Heading for the Stars, and Wondering if China Might Reach Them First*, N.Y. TIMES, Jan. 22, 2004, at A8.

110. *See* European Space Agency, *ESA Visions and Strategies*, *at* http://t2wesa.r3h.net/export/esaCP/GGGZM2D3KCC_index_0.html (last modified Mar. 23, 2004).

111. *See* THERESA HITCHENS, CENTER FOR DEFENSE INFORMATION, DEVELOPMENTS IN MILITARY SPACE: MOVEMENTS TOWARD SPACE WEAPONS? (2003), *at* http://www.cdi.org/pdfs/space-weapons.pdf.

112. *Runners Up in the Space Race, supra* note 105, at 74.

113. *Id.*

114. *Id.*

115. Eric Talmadge, *Japan Rethinks its Space Program*, ASSOCIATED PRESS, Apr. 5, 2003, *at* http://www.space.com/missionlaunches/japan_space_030405.html.

116. The Japanese Constitution, adopted in 1946, states that "the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as a means of settling international disputes . . . . [L]and, sea and air forces, as well as other war potential, will never be

Added to this are the large majority of the world's nations that are primarily interested in the economic benefits of space. Access to communications and other benefits of space are of special interest to developing nations, which want to bridge the "information gap" between the industrial nations and emerging economies. Most nations would like guarantees that space will not be used against them, and have supported strengthening the legal regime in space to constrain weaponization. This group includes key spacefaring nations. China's views have been noted, and Russia has also called strongly for an international treaty prohibiting weapons in space. In September 2001, Russian Foreign Minister Igor Ivanov outlined several key provisions for any new treaty on space security: no placing of weapons in orbit; no use or threat to use weapons against targets in space; and the establishment of adequate verification mechanisms.[117] The Russian delegate to the CD reiterated this position in January 2002, calling for a moratorium on placing weapons in space until a treaty could be achieved.[118]

In late June 2002, Russia and China submitted a first-ever joint proposal to the CD for an international treaty to ban space weapons—clearly a response to the U.S. withdrawal from the ABM Treaty several weeks earlier.[119] Although there was little new in the substance of the proposal, the fact that it dropped many self-serving provisions and focused on a few simple points that would have broad international appeal suggests that it was a serious effort. Additionally, the fact that it was a joint proposal suggests that, as critics of missile defenses have predicted, U.S. pursuit of missile defenses is driving Russia and China together, an adverse outcome for the United States. Canada, Egypt, France, Sri Lanka, and other members of the CD have also offered proposals to begin negotiations on the nonweaponization of space.[120] As David Ziegler notes, "any assertion that the United States should aggressively pursue weaponization in order to beat adversaries already rushing in that direction is highly questionable."[121]

Industry. In addition to states, a large number of private firms operate in space or provide space services to governments. Just as the interests of industry have been among the major factors conditioning the development of ocean law, so too will the interests of industry strongly influence policy in space. For example, the Truman Proclamation of 1945, in which the United States unilaterally claimed jurisdiction of the continental shelf off its coasts,[122] was driven by the needs of the U.S. oil industry for legal security over

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maintained." KENPŌ [Constitution] art. 9, paras. 1-2 (Japan).

117. James Clay Moltz, *Breaking the Deadlock on Space Arms Control*, ARMS CONTROL TODAY, Apr. 2002, http://www.armscontrol.org/act/2002_04/moltzapril02.asp.

118. *See* Ministry of Foreign Affairs of the Russian Federation, Statement by Ambassador Leonid A. Skotnikov, Permanent Representative of the Russian Federation, to the Conference on Disarmament (June 27, 2002), *at* http://www.ln.mid.ru/Bl.nsf/ø/FDC3CF91FADC6EC443256BE600374C1F?OpenDocument.

119. *See* Clare Nullis, *Russia, China Make New Push to Ban Arms in Space Over U.S. Objections*, ASSOCIATED PRESS, June 27, 2002, *at* http://www.space.com/news/russia_china_020627.html.

120. Donald Sinclair, *Outer Space: The Conference on Disarmament Dimension*, *in* ARMS CONTROL AND THE RULE OF LAW, *supra* note 70, at 29, 31.

121. Ziegler, *supra* note 19, at 52.

122. Proclamation No. 2667, 3 C.F.R. 39, 39-40 (1945) [hereinafter Truman Proclamation].

underwater areas beyond the limits of the territorial sea—a prerequisite for investment and hence development.[123] Since only the state could provide such guarantees, government was asked to act, and obligingly did so. Commercial pressure also effectively shaped the U.S. attitude toward deep seabed mining.[124]

Similar dynamics operate in space. While many telecommunications and satellite firms will have an interest in preserving a stable environment in space in which to do business, other companies have a vested interest in the militarization of space. Large U.S. defense contractors such as Lockheed Martin and Boeing, the largest and third-largest military contractors, respectively,[125] have a strong interest in the development of the multibillion-dollar U.S. national missile defense system. The two companies are heading up a team of contractors assembled by the Pentagon to integrate more effectively the dozen or so existing missile defense programs.[126] The defense funding bill signed into law on January 10, 2002, by President Bush included an $8 billion budget for missile defense development. Other companies involved include Raytheon, TRW, Inc., General Dynamics Corp., and Northrop Grumman.[127] These companies can be expected to lobby heavily for the development of U.S. military capabilities in space, including weapons.

Even commercial satellite operators may have a close relationship with the military, as the U.S. military has come to rely heavily on commercial satellite companies for communications services and remote sensing.[128] The U.S. Air Force is presently the largest customer for commercial satellite imagery in the world—and thus also a source of lucrative contracts.[129] With this kind of market leverage, the United States has sought to monopolize the distribution of commercial satellite images in times of crisis. During the 2001 war in Afghanistan, the United States purchased the exclusive rights to all images acquired over Afghanistan by the high-resolution IKONOS-2 satellite in order to prevent the satellite company, Space Imaging, from selling its pictures elsewhere. The company called its deal with the U.S. government "a wonderful business transaction."[130]

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123. This claim eventually became generalized as a part of ocean law.

124. Ian Townsend-Gault & Michael D. Smith, *Environmental Ethics, International Law, and Deep Seabed Mining: The Search for a New Point of Departure*, *in* FREEDOM FOR THE SEAS IN THE 21ST CENTURY 392, 394 (Jon M. Van Dyke et al. eds., 1993)[hereinafter FREEDOM FOR THE SEAS].

125. Hoovers Online, *The Boeing Company: Factsheet, 2004*, *at* http://premium.hoovers.com/subscribe/co/factsheet.xhtml?ID=10221 (last visited Apr. 14, 2004).

126. *See* Jim Wolf, *Lockheed, Boeing Head Missile Shield Drive*, REUTERS, Jan. 11, 2002, *at* http://cndyorks.gn.apc.org/yspace/articles/bmd/lockheedboeingheaddrive.htm.

127. *Id.*

128. According to a report prepared for the Rumsfeld Commission, the Pentagon uses commercial satellite systems for about sixty percent of its satellite communications needs. The United States relied on INTELSAT for communications among field commanders in Bosnia in 1996 and in Kosovo in 1999. HALLER & SAKAZAKI, *supra* note 99, at Part VIII.A.

129. *Id.* at Part VIII.C. *See also* Bridges, *supra* note 103.

130. Space Today Online, *The Satellite Wars*, *at* http://www.spacetoday.org/Satellites/YugoWarSats.html (last visited Mar. 24, 2004). The IKONOS-2 satellite is the world's highest resolution commercial satellite. During the 1991 Gulf War, the United States imposed an embargo on images from the U.S. LANDSAT satellite; the French company SPOT IMAGE also did not offer images of the conflict region. Jasani, *supra* note 39, at 13. As Jasani notes, monopolizing imagery may conflict with the Remote Sensing Principles, adopted by the United Nations General Assembly in 1986, which

High launch costs, and the fact that the biggest customers for high-resolution imagery are governments, will likely sustain the close relationship between commercial satellite operators and governments. However, it is likely that the *users* of satellites (i.e., telecommunications and imaging companies)—as opposed to the *builders* (i.e., defense contractors)—will see their long-term interests better protected by the development of a stable legal regime in space than by its weaponization. Commercial users have to date remained largely disengaged from the space weapons issue. It is clear, however, that—contrary to SPACECOM's fondest visions—commercial satellite operators and their backers are not clamoring for military protection, or for hardening standards or other measures that might interfere with their profitability.[131]

Scientific community. This group includes national space science agencies such as NASA and its equivalents, as well as industry- and university-based scientists, international professional associations such as the Committee on Space Research, and the nations cooperating in the ISS. These actors have a significant interest in preserving space for peaceful and scientific purposes, and in promoting international cooperation in its use (although the interests of the United States, a major ISS player, may be divided). Scientists' groups have in the past played important roles in the achievement of arms control and environmental treaties, and can be expected to have a strong interest in a more specified rule-based regime for space.[132]

The interests of these groups—states, industry, and the scientific community—will help shape the rules for any elaborated space regime. Views on how best to distribute the economic benefits of space are likely to range widely; in comparison, the relative consensus on the need to prevent the weaponization of space is quite remarkable. Only the United States (along with its defense contractors) currently stands outside this consensus. The United States justifies its position by reference to freedom of the seas in space, but, as I discuss in the following section, this analogy has outlived its usefulness as an organizing principle for space.

III. THE DECLINING RELEVANCE OF THE HIGH SEAS ANALOGY

As noted earlier, the high seas analogy has historically played a significant role in shaping the legal regime in outer space. Today, advocates of stationing weapons in space regularly invoke freedom of the seas as a

require that a country being sensed has the right to obtain images acquired over its territory in a reasonable time and at a reasonable cost. *Compare* Jasani, *supra* note 39, at 13, *with Principles Relating to Remote Sensing of the Earth from Outer Space*, G.A. Res. 41/65, U.N. GAOR, 41st Sess., Supp. No. 53, at 115-16, U.N. Doc. A/RES/41/65 (1986). However, an issue would arise only if the sensed country knows that it is being photographed from space, which is not possible for many countries.

131. *See* Peter Hays & Karl Mueller, *Going Boldly—Where?: Aerospace Integration, the Space Commission, and the Air Force's Vision for Space*, AEROSPACE POWER J., Spring 2001, at 34, 41.

132. For examples of scientists' associations that have advocated strengthening the space regime to prohibit space weaponry, see Robert Schingler et al., Workshop Report, *Pugwash Workshop on Preserving the Non-Weaponization of Space*, Pugwash Online (May 22-24, 2003), *at* http://www.pugwash.org/reports/sc/may2003/space2003-report.htm; Union of Concerned Scientists, *Global Security: Space Weapons*, *at* http://www.ucsusa.org/global_security/space_weapons/index.cfm (last revised Oct. 20, 2003).

rationale for space weapons, implying that the military use of space will recapitulate earlier experiences with navies on the high seas. However, a central question is whether this analogy continues to be useful—and whether it is even accurate. Vast changes both in space as an issue area, and in international law itself, point to the declining utility of this analogy as a guide to regulating outer space. Moreover, the historical analogy between the high seas and space is flawed; the nature of space, its uses, and its relation to earth are significantly different from the nature and uses of the high seas and their relation to the land.

Within the realm of ocean law, the "freedom of the seas" concept is today seen as an increasingly weak principle for guiding management of the oceans. While long held up as a sacrosanct principle, in actual practice it has been controversial—and increasingly circumscribed in ocean law since 1945. The principle has been open to competing interpretations not only between great and small powers, but even among European seafaring nations themselves. It is the fact that freedom of the seas has essentially meant "lack of law" that has stimulated the drive to articulate ocean law more clearly in the 1982 Law of the Sea Convention.[133] However, although the freedom of the seas principle is of declining utility to the effective regulation of the oceans—for reasons that are also relevant to space—the pattern of development of the law of the sea more generally, especially since 1945, is instructive for thinking about a more articulated legal regime for outer space.

A. *The High Seas Analogy and Outer Space*

Historically, the use of outer space, like the use of the high seas, has been based largely on a "first come, first served" principle. Anything that is not expressly prohibited is permitted. Just as the ocean-going powers with large deep-water navies traditionally exercised a dominant influence on the development of ocean law, so too have the dominant space powers disproportionately shaped space law. Prior to the 1982 Law of the Sea Convention,[134] ocean law developed very much as customary law based on state practice, where power largely shaped the rules. This too has been the case with space so far. When President Eisenhower first established the nation's space policy in the mid-1950s, it was built around the explicit notion of freedom of space and a space-for-peaceful-purposes policy.[135] While this effort was partly for propaganda purposes, it was also designed to fend off any claims of sovereignty over space that might limit U.S. freedom of action there.

Advocates of weaponizing space draw on the high seas analogy in justifying their position. They argue that the Outer Space Treaty's reference to

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133. As the Permanent Court of International Justice stated in the *S.S. Lotus* case, "apart from certain special cases . . . vessels on the high seas are subject to no authority except that of the State whose flag they fly." S.S. Lotus (Fr. v. Turk.), 1927 P.C.I.J. (ser. A) No. 10, at 25 (Sept. 7). For further discussion, see MYRES MCDOUGAL & WILLIAM T. BURKE, THE PUBLIC ORDER OF THE OCEANS 868-75 (1962).

134. LOS Convention, *supra* note 2.

135. For a discussion of Eisenhower's Open Skies policy, see WALTER A. MCDOUGALL, THE HEAVENS AND THE EARTH: A POLITICAL HISTORY OF THE SPACE AGE 127-28 (1985).

the U.N. Charter's right of self-defense[136] permits uses of space deemed necessary for national security (just as it permits the use of the high seas for similar purposes). In May 2002, Ambassador Eric Javits, the Bush administration's negotiator at the CD in Geneva, stated:

> Article 51 of the UN Charter makes it clear that all Member States have the inherent right of individual and collective self-defense. The global responsibilities of the United States, and the new threats facing it in today's world, require that that right be exercised both on the Earth and above it.[137]

This right, in the view of space weapons supporters, would include not only military support missions, but potentially also the military force application missions arising from the stationing of weapons in space.

More specifically, the logic of national dominance promoted by advocates of space weapons relies heavily on the analogy with dreadnoughts sailing on the high seas. Just as Great Britain ruled the waves a hundred years ago under a freedom of the seas principle, so too can the United States rule space today. According to one writer invoking the sea power theory of Alfred Thayer Mahan,

> [m]uch as the British ruled their vast Empire through control of a few critical outposts, occupation of critical space chokepoints—terrestrial launch facilities, low-earth orbit in the near-Earth space, the Moon and libration points in Lunar space, and the planets, primary asteroids, and major moons of Solar space—will guarantee dominance and control of the space lines of communication and commerce.[138]

This list, however, would appear to involve well more than a few chokepoints.

Its frequent invocation notwithstanding, the freedom of the seas analogy is both simplistic and misleading. First, it relies implicitly on a false dichotomy between law and "freedom of action," implying that these two concepts are mutually exclusive. However, the law/freedom of action dichotomy has been gradually disappearing as a meaningful distinction in international practice.[139] The rise of interdependence and globalization means that actors interfere with each other, both deliberately and inadvertently. "It is increasingly clear that no single country—or small group of countries—no matter how powerful, can consistently achieve its objectives through unilateral action or ad hoc coalition," a situation referred to as "the new sovereignty."[140] The number of states has expanded greatly, while the number, types, complexity, and intensity of international and transnational interactions are increasing even more rapidly. These developments require very high levels of coordination and cooperation among complex activities. They make it

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136. U.N. CHARTER, art. 51; Outer Space Treaty, *supra* note 27, art. III, 18 U.S.T. at 2413, 610 U.N.T.S. at 208.

137. Javits, *supra* note 75.

138. Everett C. Dolman, Astropolitics and Astropolitik: A Geopolitical Framework for Outer Space Strategy, (undated)(unpublished manuscript, on file with The Yale Journal of International Law).

139. Dinah Shelton, *Introduction: Law, Non-Law, and the Problem of 'Soft Law,' in* COMMITMENT AND COMPLIANCE: THE ROLE OF NON-BINDING NORMS IN THE INTERNATIONAL LEGAL SYSTEM 1, 17 (Dinah Shelton ed., 2000) [hereinafter COMMITMENT AND COMPLIANCE].

140. ABRAM CHAYES & ANTONIA HANDLER CHAYES, THE NEW SOVEREIGNTY: COMPLIANCE WITH INTERNATIONAL REGULATORY AGREEMENTS 123 (1995).

increasingly difficult, if not often impossible, for a state to achieve its interests purely through informal, ad hoc, or unilateral approaches. As Chayes and Chayes argue, "[t]he traditional attributes of effective foreign policy in the security area—flexibility, energy, secrecy—tend to give way before the growing importance for the new sovereignty of predictability, reliability, and stability of expectations."[141] The development of, and compliance with, rules governing an issue area becomes not so much a constraint on the state's freedom of action as a necessary condition for realizing its full range of objectives. This trend is clearly reflected in ocean law, where there is no better example than the decision of the anti-treaty Bush administration, in November 2001, to support accession to the Law of the Sea Convention, seven years after it came into force.[142]

A second weakness of the high seas analogy is that the concept of freedom of the seas is increasingly less useful even for the oceans, for reasons that are also relevant to outer space. The notion of freedom of the seas evolved at a particular historical time to meet the needs of a particular era. It has not been a static concept. Rather, it has changed as the nature of the international community and its needs and interests have changed. The extent of freedom of the seas therefore depends on state practice rather than on any innate quality of the high seas.

1. *The Evolving High Seas Concept*

Freedom of the seas is the principle that, outside its territorial waters, a state may not claim sovereignty over the seas except with respect to its own vessels. The notion as coined by the Dutch jurist Hugo Grotius in 1609 in his famous *Mare Liberum* was based in part on a widespread perception at the time that the seas had "limitless" resources.[143] Grotius argued that the seas should be free for navigation and fishing because natural law forbids ownership of things that "seem to have been created by nature for common use."[144] Things for common use are those that "can be used without loss to anyone else."[145] From Grotius's perspective, the fish of the oceans seemed limitless, and thus fishing efforts by one nation did not interfere with the rights of other nations' vessels to fish in the same region.[146] Grotius also argued that the seas cannot constitute property because they cannot be occupied in the sense in which land can be occupied, and that they are therefore free to all nations and subject to none.[147] In developing his

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141. *Id.* at 124.

142. *See* U.S. Ambassador Sichan Siv, U.S. Representative to the U.N. Econ. & Soc. Council, Statement in the General Assembly on Oceans and Law of the Sea (Nov. 27, 2001), *at* http://www.state.gov/g/oes/rls/rm/6796pf.htm.

143. *See* HUGO GROTIUS, MARE LIBERUM 27 (Ralph van Daman Magoffin trans., Oxford Univ. Press 1916) (1633), *quoted in* Jon M. Van Dyke, *International Governance and Stewardship of the High Seas and Its Resources*, *in* FREEDOM FOR THE SEAS, *supra* note 124, at 13, 14.

144 *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

argument, Grotius drew on Roman legal principles as well as the free navigation traditions of Asia and the East Indies.[148]

Grotius's effort was actually a political tract to defend the Dutch East India Company's right to navigate in the Indian Ocean and other eastern seas over which Spain and Portugal had asserted a commercial monopoly as well as political domination.[149] Claims that asserted territorial sovereignty over the seas had increased markedly during the sixteenth and seventeeth centuries, largely because of the growth in world trade following the discovery, exploration, and colonization of new lands.[150]

Two hundred years were to pass before Grotius' principle prevailed. In the meantime, John Selden's 1636 work, *Mare Clausum*, advocating "closed seas"—or, controlling as much ocean as a state's power would permit—became the operative guide.[151] Selden's tract was published at the express command of Britain's King Charles to express the British view on the subject and to defend the "Dominion of the British Seas."[152] Selden, a prominent scholar, historian, and lawyer, tried to prove that the sea had in fact been appropriated in many cases. He also asserted that the seas did not have inexhaustible resources.[153]

Despite Grotius's tract on freedom of the seas, the Dutch East India Company paid little attention and went on to pursue a monopoly of trade, eventually defeating the Portuguese in the East Indies; in fact, Grotius himself later abandoned the arguments of his book in defense of the imperial interests of his country.[154] From the late fifteenth century through the early nineteenth century, the major powers attempted to exclude commercial rivals from parts of the open seas. They attacked other ships and actively tried to prevent commerce by other nations in areas where the major powers claimed dominion. The Dutch championed freedom of the seas in the Atlantic (where the British dominated) while claiming *mare clausum* in the East Indies (where they dominated), whereas the British claimed *mare clausum* in the Atlantic and pleaded for open seas in the East Indies.[155] In defending England's claims for sea dominion in the Channel, "Selden [was] forced to disprove the French claims to a like dominion."[156] *Mare clausum* largely prevailed during this period because of the weight of British naval power behind it. King Charles had started building up the British naval fleet, and in the eighteenth century, the Atlantic "became virtually an English lake."[157]

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148. R.P. ANAND, ORIGIN AND DEVELOPMENT OF THE LAW OF THE SEA 80, 82-84 (1983). For a fuller exposition of the free navigation tradition in Asia and the East Indies, see *id.* ch. 2.

149. *See id.* at 78-79.

150. For a summary of this history, see PITMAN B. POTTER, THE FREEDOM OF THE SEAS IN HISTORY, LAW, AND POLITICS 57-96 (1924).

151. *Id.* at 58 (citing JOHN SELDEN, MARE CLAUSUM (J.H. Gent trans., Andrew Kembe & Edward Thomas 1663) (1636)).

152. ANAND, *supra* note 148, at 105. For a more extensive discussion of the Grotius-Selden debate, see *id.* at 72-123; POTTER, *supra* note 150, at 57-80.

153. ANAND, *supra* note 148, at 106.

154. *Id.* at 95-98.

155. *Id.* at 110.

156. POTTER, *supra* note 150, at 60.

157. ANAND, *supra* note 148, at 109.

It was not until after the Napoleonic wars and the rise of European imperialism in the nineteenth century that freedom of the seas became the operative principle. Great Britain, as the strongest naval and industrial power, became its champion and policeman. Why did Great Britain shift to support of *mare liberum* after 1815? Three primary factors explain the shift. First, economically, freedom of the seas was more suited to the needs of the industrial revolution in Europe than was *mare clausum*. The industrial revolution in the late eighteenth and early nineteenth centuries, along with the rise of nineteenth-century imperialism, vastly expanded commercial possibilities. As Europeans became more interested in commercial prosperity and trade, and ever more Europeans needed to travel to Asia and Africa, freedom of the seas became accepted as a more useful principle, and *mare clausum* came to be seen as an anachronism.[158] Great Britain, as the cradle of the industrial revolution, stood to benefit greatly from a system based on free trade and open seas. Second, the freedom of the seas principle also prevailed because the British (and the Dutch) had the military might to protect the right of their commercial vessels to sail unrestrained throughout the oceans. Third, and finally, on the ideational side, a shift in the dominant economic philosophy in Great Britain from mercantilism to liberalism provided a key intellectual underpinning for free trade and the freedom of the seas principle.[159]

Efforts to codify the freedoms of the high seas began early in the twentieth century.[160] Drafts of the law of the sea prepared by international legal scholars provided four distinct freedoms: freedom of navigation; freedom of fishing; freedom to lay submarine cables and pipelines; and freedom to fly over the high seas.[161] The work of these scholars developing the notion that freedom of the seas "was really a composite of specific freedoms had a great impact on the official conventions which followed."[162]

By the 1950s, however, Grotius's principle no longer prevailed. In 1950, the famous French jurist Gilbert Gidel had already written that in "fisheries and mineral resources the Grotian tradition of freedom of the high seas is losing its paramountcy which, generally speaking, had survived fairly well down to the present day."[163] He continued, "the expression 'freedom of the high seas' is in reality a purely negative, worn-out concept, nothing more; it has no meaning for us, except as the antithesis of another, a positive concept

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158. R. P. Anand, *Changing Concepts of Freedom of the Seas: A Historical Perspective*, *in* FREEDOM FOR THE SEAS, *supra* note 124, at 72, 76.

159. *See* BERNARD SEMMEL, LIBERALISM AND NAVAL STRATEGY: IDEOLOGY, INTEREST AND SEA POWER DURING THE PAX BRITANNICA 8-12 (1986). In the mercantilist view, commerce was a type of war, and increasing the national wealth significantly meant depriving other countries of trade by effective competition. Thus, in the eighteenth century, the English Crown would award commissions to private citizens to prey on the shipping of a competing great power. In the emerging liberal view, by contrast, trade replaced war as the route to wealth, and peace would facilitate commerce. British liberals disapproved of the traditional mercantilist strategy of commercial war as immoral as well as harmful to economic interests. *Id.* at 4-8, 18.

160. Hamilton DeSaussure, *The Freedoms of Outer Space and Their Maritime Antecedents*, *in* SPACE LAW: DEVELOPMENT AND SCOPE 1, 4 (Nandasiri Jasentuliyana ed., 1992).

161. *Id.*

162. *Id.*

163. ANAND, *supra* note 148, at 238.

[that the high seas are subject to territorial dominion], which has long since disappeared."[164] While the purely negative concept might be suitable for the use of the sea as a means of communication, it was not suitable for the sea as a source of wealth, because the resources were not inexhaustible.[165] This is even more true today. In recent decades, developments such as drift net use, leading to overfishing and widespread marine pollution, challenge the view that the seas have "limitless" resources and infinite capacity to absorb activities.[166] Military activities on the sea also pollute and interfere with other kinds of activities. Whereas one of the historic freedoms of the high seas has been the freedom to use the oceans as a garbage dump, it is widely recognized today that the oceans do not have "a limitless capacity to assimilate pollution."[167]

Such concerns led the international community to begin its efforts to codify ocean law, first in a set of conventions in 1958, and then in a more comprehensive effort that resulted in the 1982 Law of the Sea Convention.[168] At the time, overfishing was already a problem, with bitter and protracted fisheries disputes flaring between European states, while "offshore oil drilling was in its infancy, but its potential was already apparent."[169] The 1958 conference produced four conventions, though they largely asserted the traditional law of the sea, codified traditional practices of the great powers, and left large gaps which "continued to widen during the subsequent decades."[170] No agreement was reached on the outer limits of the territorial sea, on fisheries jurisdiction, or on the limits of the continental shelf. States were able to select from among the four conventions, becoming party to one while disregarding the others. The treaties thus produced "a fragmented system that allowed chaotic claims to national jurisdiction, extermination of fisheries, and pollution of the marine environment."[171] They "codified what had already been accepted, and left unsettled what had not, including where the high seas began."[172] They revealed the weakness of an ad hoc, as opposed to a more comprehensive, arrangement.

It was evident that something had to be done. Elizabeth Borgese has identified three major factors that converged to motivate the effort toward developing a more comprehensive regime: (1) the great powers wanted the limits of national jurisdiction stabilized to protect the freedom of navigation; (2) new states that had not participated in earlier law of the sea conferences wanted their say; and (3) technological developments made marine resources available further out and deeper down, hastening the extinction of commercial fisheries and the pollution of the marine environment.[173]

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164. *Id.* at 232.
165. *Id.* at 233.
166. *See* Van Dyke, *supra* note 143, at 14-18.
167. *Id.* at 16-17.
168. For a summary of this history, see ANAND, *supra* note 148, at 159-90.
169. Elizabeth Mann Borgese, *The Process of Creating an International Ocean Regime to Protect the Ocean's Resources*, *in* FREEDOM FOR THE SEAS, *supra* note 124, at 23, 23.
170. *Id.*
171. *Id.*
172. ANAND, *supra* note 148, at 184.
173. Borgese, *supra* note 169, at 23-24.

Developing countries, especially, have generally been critical of traditional ocean law as codified in the 1958 Convention on the High Seas,[174] and of the concept of freedom of the seas, which, they believe, has been inimical to their interests—just as they have been critical of the "first come, first served" principle of outer space.[175] After 1960, the trend toward curbing the freedom of the seas by extending coastal state jurisdiction for the protection of the security and economic interests of the coastal states increased.[176] When the Third United Nations Law of the Sea Conference (UNCLOS III) convened in 1974 in Venezuela, the new U.N. majority of developing countries made it clear that it was only the great seafaring countries "that profited most from these unlimited and undefined freedoms" of the traditional law.[177] "The continuing *laissez-faire* of the high seas had ceased to serve the interests of international justice."[178] As the Kenyan representative pointed out during the negotiations, "in 1970 the developed countries with less than one-third of the world's population, had taken 60 per cent of the world catch of fish, while only 40 per cent had gone to the developing countries."[179]

Arvid Pardo's early draft law of the sea convention was based on the conviction that laissez-faire policy on the high seas had become dysfunctional.[180] The treaty that eventually emerged from negotiations in 1982, while preserving the concept of freedom of the seas, did so in a much-circumscribed fashion. It also departed from traditional ocean law in many ways. The treaty reduced the size of the high seas by creating a 200 nautical mile Exclusive Economic Zone (EEZ), but nevertheless reaffirmed that the governing regime for the remaining high seas is one of freedom of access and use.[181] These "freedoms" on the high seas must be exercised with "due regard," however, to the interests of other states and embody a concept of "reasonable use." A guiding principle of UNCLOS III was that, in the future, the sea must be used for the benefit of all and not merely for the interest of a few great powers. Some freedom will be preserved, but—like the freedom an individual enjoys in society—it is limited by agreed-upon legal principles.[182]

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174. Convention on the High Seas, Apr. 29, 1958, 13 U.S.T. 2312, 450 U.N.T.S. 82.

175. With regard to ocean law, see ANAND, *supra* note 148, at 188, 197. On space, see CHENG, *supra* note 43, at 564-66; Benkö & De Graaff, *supra* note 56.

176. ANAND, *supra* note 148, at 198-203.

177. *Id.* at 209.

178. *Id.*

179. *Id.* at 199.

180. CHURCHILL & LOWE, *supra* note 50, at 145; Borgese, *supra* note 169, at 31.

181. The LOS Convention is an extensive, complex document touching on a wide range of issues. The most significant areas of the convention deal with naval power and maritime commerce, coastal state interests, protection of the marine environment, marine scientific research, and international dispute settlement. Key provisions establish a twelve nautical mile territorial sea limit and a 200 nautical mile Exclusive Economic Zone; rights of innocent passage; the innovative concept of "transit passage" (through straits); jurisdiction over the continental shelf; seabed mining rights and the concept of the common heritage of mankind; compulsory arbitration or adjudication for disputes; and three new institutions (the International Seabed Authority, the dispute resolution tribunal, and the Commission on the Limits of the Continental Shelf). MARJORIE ANN BROWNE, CONG. RES. SERVICE, THE LAW OF THE SEA CONVENTION AND U.S. POLICY 2-7, http://www.ncseonline.org/NLE/CRSreports/03Jun/IB95010.pdf (last modified Mar. 19, 2003).

182. Borgese, *supra* note 169, at 33-34.

The contrast between the LOS Treaty and the traditional law of the sea is important, with regard both to new principles of law and to the process by which the 1982 regime was created. It established the notion of the common heritage of mankind as a guiding principle for regulating the use of global commons.[183] In the LOS Treaty, the principle applied particularly to the deep seabed, but it introduced important notions of equity and a global public interest. The treaty evolved in little more than a decade, through a truly international process that attempted to address the broadest possible agenda of national wishes and aspirations. In contrast, the old law of the sea evolved gradually, within narrower confines, and was the product of inputs from relatively few states (compare the 1958 conference, which involved about 87 states, with the 1982 conference which involved about 150.)[184]

The legal regime for outer space today bears significant similarities to the unsatisfying state of ocean law after the 1958 conventions but prior to the 1982 treaty. In the ocean regime of that time, agreement existed on a vague freedom of the seas—freedom of peaceful navigation with a few agreed-upon rules of the road that benefited European seafaring states—but little agreement existed on other rules.[185] Similarly, today's space regime is characterized by broad principles (i.e., peaceful purposes, nonappropriability, and freedom of use) largely left open to unilateral interpretation. Just as states could pick and choose among the 1958 ocean conventions, so too can states today pick and choose among the current outer space treaties. Finally, to date, the space regime, like the pre-1982 ocean regime, has largely been defined by the small number of nations with the capacity to exploit the domain.[186]

Freedom of the seas, in other words, was a euphemism for the absence of law. It represented the right of freedom from any kind of interference (most strongly defended by Great Britain), leaving uses of the ocean open to unilateral interpretation without regard to possible consequences and with little accountability. As nations eventually discovered, in the absence of agreed-upon rules, the use of the ocean became a chaotic, uncertain, and often conflictual matter.

2. *"Reasonable Use" and the Military Loophole*

Although the 1982 treaty preserves the freedom of the seas concept, albeit in circumscribed form, for many ocean law experts today, as well as for many states, the principle appears increasingly anachronistic and inadequate for meeting today's complex challenges to the sea. Technological developments and the practices of states in recent years have dramatically demonstrated the inadequacy of the approach.[187] The notion of reasonable use, for instance, remains open to subjective and unilateral interpretation, leaving the door open to "anything goes" attitudes. Especially problematic, the

183. ANAND, *supra* note 148, at 203-05.
184. *Id.* at 209.
185. *See supra* notes 168-179 and accompanying text.
186. *See supra* note 93-95 and accompanying text.
187. This is the general theme of the essays in FREEDOM FOR THE SEAS, *supra* note 124.

principle is nearly useless for controlling military activities, leaving them essentially unregulated.[188] To serve their military purposes, which include nuclear and ballistic missile testing and naval maneuvers, nuclear states claim the right to declare broad areas of the high seas as exclusionary or warning zones off-limits to free navigation.[189] These zones, which result from claims to areas as large as the 400,000 square miles around Bikini Atoll for U.S. tests, can significantly interfere with other uses of the seas, such as fishing and navigation; the radioactive contamination of the Japanese fishing boat Lucky Dragon in 1954 is a sad example. Weapons testing and combat training can also cause environmental damage, especially harmful in areas designated for scientific research. In some cases, military activities have resulted in significant damage to commercial vessels.[190]

Although the nuclear powers proclaim their adherence to the freedom of the high seas in the abstract, conflicts with the principle arise when they assert claims of national security to justify use of the seas for weapons testing.[191] The nuclear testing programs in the Pacific Ocean generated widespread protests against the atmospheric testing of nuclear bombs and the legality of exclusionary danger zones.[192] In 1963, in response to public concern about radioactive contamination from testing—and a general sense in both the United States and the Soviet Union that restraint was called for after the 1962 Cuban missile crisis—the United States, the Soviet Union, and Great Britain negotiated the Limited Test Ban Treaty,[193] which moved their nuclear test programs underground. France and China continued to test in the atmosphere. When, after a long break, France resumed nuclear testing in the Muroroa Atoll in 1995, antinuclear movements organized a boycott of French wine and other goods, stunning French leaders and the military establishments of the nuclear states with the strong public outcry and forcing France to curtail the testing program.[194] Testing on the high seas is probably now prohibited by customary international law (it is hard to argue that a nuclear test on the high seas shows "reasonable regard" for the interests of other states). While missile testing has somewhat less of an impact on the environment than nuclear weapons testing,

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188. According to Churchill and Lowe, "apart from vague provisions reserving the seas for peaceful purposes, the Law of the Sea Convention has largely ignored the question of military uses." CHURCHILL & LOWE, *supra* note 50, at 270 (citation omitted).

189. *Id.* at 270-77.

190. Jon M. Van Dyke, *Military Exclusion and Warning Zones on the High Seas*, *in* FREEDOM FOR THE SEAS, *supra* note 124, at 445, 446-47.

191. The United States, for example, maintains that it is not asserting sovereignty over these zones, and that they are simply warning zones, "predicated on voluntary compliance." *Id.* at 451. The United States has had difficulty sustaining this "voluntary compliance" position in practice, generally responding with force when others, often Greenpeace ships, have entered the zone in protest. *Id.*

192. In the *Nuclear Tests* cases, Australia challenged French nuclear testing in the Pacific, arguing that "the interference with ships and aircraft on the high seas and in the superjacent air space, and the pollution of the high seas by radioactive fall-out, constitute infringements of the freedom of the high seas." CHURCHILL & LOWE, *supra* note 50, at 147. *See also* Nuclear Tests (Austr. v. Fr.), 1974 I.C.J. 253 (Dec. 20).

193. Limited Test Ban Treaty, *supra* note 28.

194. *See* Gail Russell Chaddock, *Firestorm of Protest Radiates from Pacific*, CHRISTIAN SCI. MONITOR, Aug. 11, 1995, at 1; Philip Hay, *Pacific Critics Use a Megaphone Against Chirac: Amplified Denunciations May Finally Get France To Stop Its Nuclear Testing*, CHRISTIAN SCI. MONITOR, Nov. 7, 1995, at 18.

it is likely that missile testing on the high seas will continue to be accepted as a legitimate use of the sea only " insofar as it does not significantly interfere with navigation and fishing or pose serious safety concerns."[195]

Thus, the freedom of the seas concept, even with the addition of the reasonable use principle, often remains too abstract and open to unilateral interpretation. Ocean law experts challenge the conventional wisdom that freedom of the seas is a sacrosanct principle that promotes universally positive values.[196] Many argue that freedom of the seas should finally be abandoned for good. Under this view, freedom of the seas must be recast as freedom *for* the seas, an approach that takes a more ecological perspective, emphasizing widespread participation in decisionmaking regarding the oceans and the need for a more refined regime for ocean regulation.[197]

In sum, the two factors discussed here—the general decline of the law/freedom of action dichotomy in international practice due to the rise of interdependence, and the declining usefulness of the freedom of the seas concept even for the seas—point to the declining relevance of the high seas analogy for outer space. Space is more like the seas of today than the seas of a hundred years ago. As noted earlier, there are more, and a greater variety of, actors involved in space than on the traditional high seas. Space is not limitless, and it does not have an infinite capacity to absorb activities. The tiny tube of space available for geostationary satellites and the increasing quantity of debris in near-Earth space both place serious physical limits on space activities, while military activities in space could preempt other uses. On the policy side, the lack of an agreed-upon definition of peaceful uses, the lack of a clear definition of outer space or of space weapons, and the lack of legal protection for commercial satellites make for an uncertain and unpredictable global order in space.

Although the United States has long championed freedom of the seas, it has also played a significant role in the international departure from the purely negative concept of freedom of the seas. As early as 1887, the United States tried to persuade European governments and Japan that international cooperation would be advantageous to protection of the fur-seal fishing industry in the Bering Sea.[198] Its dispute with Great Britain over fur-seal fishing—whether fur-seals could be protected outside the three-mile limit of the territorial sea—initiated the trend toward change in the law and the protection of coastal fisheries by the coastal states.[199] The most important challenge to the traditional law of the seas doctrine came with the 1945 Truman Proclamation extending U.S. jurisdictional claims over the continental shelf.[200] This led to numerous claims by other states for continental shelf jurisdiction and protection of fisheries, codified several

195. Van Dyke, *supra* note 190, at 458.

196. *See* Van Dyke et al., *Introduction: Traditions for the Future, in* FREEDOM FOR THE SEAS, *supra* note 124, at 1, 3-5.

197. *See generally* LAWRENCE JUDA, INTERNATIONAL LAW AND OCEAN USE MANAGEMENT (1996); Van Dyke et al., *supra* note 196.

198. ANAND, *supra* note 148, at 233.

199. *Id.*

200. Truman Proclamation, *supra* note 122.

decades later in the LOS Treaty.[201] Although the United States was largely pursuing its unilateral interests in these cases, its efforts led ultimately to the formation of a cooperative regime to manage resources, in which the United States played a leading negotiating role. Thus, the United States has itself often sought to balance freedom to pursue its national interests with cooperation to manage resources and activities, an approach that would be relevant for space as well.

B. *Beware Simplistic Analogies: The False Analogy Between Freedom of the Seas and the Military Use of Space*

The weakness of the freedom of the seas concept in regulating military uses of the oceans points to its even greater inadequacy for regulating military uses of space, because the military threat posed by space weapons could conceivably become even greater than that posed by weapons on or under the high seas. Supporters of weapons in space suggest that there is little conceptual difference between warships on the high seas and weapons in space. Both operate in a global commons under a freedom of access and use principle. Thus, the United States should be free to transit space with weapons, just as it is free to do on the high seas. Further, just as navies are needed to escort commercial shipping, so too will commercial satellites in space need military protection and escorts. According to one Air Force general, "satellite systems of the United States and its allies are, for the most part, unprotected on the open seas of space" and therefore need "some form of security or escort."[202] According to General Thomas Moorman, Jr., a member of the Rumsfeld Commission, as the number of U.S. satellites in space increases, the United States "will want to provide the necessary protection and deterrence to attack. Here the naval analogy of freedom of the seas is apt."[203]

These are dubious analogies. Several significant differences exist between naval freedom of the seas and the military use of space. First, the implicit threat from military activities at sea, present at the time the traditional law of the sea was laid down, is nothing like the potential threat from space if space were to become weaponized. The freedom of the seas concept evolved in the era of nineteenth century battleships when the difference between the territorial sea and the high seas was real. Warships on the high seas were out of range of land and were thus unable to threaten coastal states unless they came in close range. Today's modern nuclear and cruise missile–armed ships and submarines are an anomaly in this regard. They eliminate any protection the territorial seas once provided, leaving all states vulnerable to attack from

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201. CHURCHILL & LOWE, *supra* note 50, at 110-11.

202. Lt. Gen. Bruce Carlson, *Protecting Global Utilities: Safeguarding the Next Millennium's Space-Based Public Service*, AEROSPACE POWER J., Summer 2000, at 37, 37-38.

203. Gen. Thomas S. Moorman Jr., *The Explosion of Commercial Space and the Implications for National Security*, AIRPOWER J., Spring 1999, at 6, 19. *See also* Simon P. Worden, *Space Control for the 21st Century: A Space "Navy" Protecting the Commercial Basis of America's Wealth*, *in* SPACEPOWER FOR A NEW MILLENNIUM 225 (Peter L. Hays et al. eds., 2000). Worden, providing a detailed exploration of the issue, eventually acknowledges that the "naval analogy breaks down a bit in space. Satellites are not ships." *Id.* at 233.

the high seas. This is clearly an unsatisfying situation for many coastal states, and helps account for the numerous unilateral claims of sovereignty by coastal states over waterways that border their territory, presumably in violation of traditional free navigation norms.[204]

This vulnerability would be exacerbated in space, where factors of speed, the susceptibility of space activities to disruptions with consequent effects on earth, and the perceived close link between military activity on Earth and military activity in space would enhance the risk posed to others. Here it is useful to distinguish between the physical effects of space weapons and their geostrategic impact. From the perspective of their physical effects, in most cases, space-based weapons increase present threats rather than replace them with much greater threats. Space-launched missiles move hardly any faster and reach no farther than submarine-launched missiles. Space-borne weapons are much more vulnerable than land-based weapons. And inland nations are not really safer from attack from the oceans than attack from space.

However, space-based directed energy weapons, such as lasers, would move faster and could strike targets on Earth and in the atmosphere with enormous speed.[205] Lasers would also pose a significant threat to the survivability of space systems. They might make possible a prompt "sky-sweeping" attack against military satellites without significant tactical warning. In such a case, redundancy of satellites would be of little value. This would pose a threat of great magnitude to a state dependent on satellites for essential military functions. More generally, strategic defense systems based in space would pose significant threats to other space-based systems, and to targets in the atmosphere and on earth as well.

In terms of their geostrategic impact, space-based weapons do not simply enhance existing threats but introduce a new and greater danger because of the threat they pose to strategic stability. The vulnerability of space-based weapons will likely create incentives for preemptive attack to protect the weapons during a crisis, greatly increasing the likelihood of war. Further, although supporters of space weapons claim that, consistent with the United States' defensive orientation to the world, such weapons would be for defensive purposes, the reality is that, given their characteristics, many of them are inherently offensive weapons. It is widely recognized that space-

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204. More than fifty countries make such claims, which concern unrecognized historical waters claims, improperly drawn baselines, territorial sea claims greater than twelve miles, security zones not provided for in the LOS Convention, Exclusive Economic Zones that negate or restrict overflight rights, restrictions on innocent passage through territorial seas, requirements for advance notice of innocent passage, and restrictions on transit passage. J. ASHLEY ROACH & ROBERT W. SMITH, UNITED STATES RESPONSES TO EXCESSIVE MARITIME CLAIMS 15-16 (2d ed. 1996). The United States objects to these claims by others as unlawful, although it maintains various kinds of security zones itself. *See* Capt. George Galdorisi, *The United States and the Law of the Sea: Changing Interests and New Imperatives*, NAVAL WAR C. REV., Autumn 1996, at 23. In reality, there is no reason why coastal states should feel more threatened than inland states. Missiles launched from submarines can reach anywhere, and cruise missiles launched from ships can reach most, if not all, inland states.

205. A space-based directed energy weapon would require less than a millisecond to strike an air-based object flying at an altitude of ten kilometers. Philip J. Baines, *A Convention for the Non-Weaponization of Outer Space*, *in* ARMS CONTROL AND THE RULE OF LAW, *supra* note 70, at 65, 69.

based ballistic missile defense systems could carry out surprise attacks against terrestrial targets or satellites.

Exacerbating the threat posed by space weapons is the Cold War-era deterrence logic that continues to dominate U.S. military planning. This logic emphasizes deterrence of threats through overwhelming force, carried out during the Cold War through the confrontational posturing of large, opposing forces on hair-trigger alert. The extension of this deterrence logic to space, as envisioned in current U.S. space plans, will turn space into a domain of overwhelming threat against which most states have little protection.[206] The new preemptive logic of the Bush administration's first National Security Strategy, released in September 2002, will make this situation even worse.[207]

Finally, the right of passage in space, including by private actors, risks being transformed into a right of stay because of the close link between private actors and governments in space activities, and the continued prevalence of a "first come, first served" ethic.[208] In sum, for several reasons, the transit of space is not nearly as innocent as transit over the ocean.

A second flaw of the freedom of the seas analogy is that the need for "naval" escort in space is not the same as on the seas. As Peter Hays and Karl Mueller point out in a critique of the U.S. Air Force's conservative thinking about space, "commercial space activities are fundamentally different from merchant shipping and air transport in every respect, save that all three are economically important."[209] One difference is that satellites collect, relay, or transmit information, while commercial shipping transports goods and people. As Hays and Mueller note, this has a number of significant implications. Unlike for the oceans, space piracy is not a problem, so space navies are not required to suppress it. In addition, the vulnerability of satellite communications to attack can be reduced by relaying transmissions through backup and redundant systems (goods and people, in contrast, can only travel on one vessel at once).[210] In short, satellite commerce resembles telegraphy or radio more than it does maritime trade. Hays and Mueller caution space strategists to "resist the temptation to engage in easy but fallacious generalizations about the equivalence of maritime trade and commercial space operations, or the need to escort commercial satellites as if they were ships at sea."[211] In their view, relying on false analogies inhibits the Air Force from

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206. For a critique of continued U.S. reliance on deterrence logic as an organizing principle of security, see generally JOHN STEINBRUNER, PRINCIPLES OF GLOBAL SECURITY (2000). For a discussion of space as a possible catalyst for a transformation of this logic, see *id.* at 118-22.

207. *See* THE WHITE HOUSE, THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES OF AMERICA (2002), http://www.cdi.org/national-security-strategy.

208. *See* Patrick Salin, *Privatization and Militarization in the Space Business Environment*, 17 SPACE POL'Y 19, 21-22 (2001).

209. Hays & Mueller, *supra* note 131, at 40.

210. To reduce vulnerability, satellite systems should emphasize a large number of small satellites. *See id.*, *supra* note 131, at 41; MUELLER, *supra* note 22, at 5-7.

211. Hays & Mueller, *supra* note 131, at 41. As Hays and Mueller note, the Air Force does not routinely make a practice of escorting commercial airliners, even though they are economically important and entirely vulnerable to attack. Even with respect to the oceans, the need for great power naval forces to enforce the freedoms of the seas is much reduced in the context of a strong international consensus on maritime issues, as has been taking shape under the LOS Convention. In the future, it would be desirable to have more internationalized naval forces and more cooperation of national navies.

thinking seriously about how space, and threats to activities in space, are different from those in other domains.

A third flaw of the freedom of the seas analogy is that what advocates of space weapons are proposing for U.S. policy is not an accurate parallel with how Great Britain actually policed the seas in the nineteenth century. British naval policing activities during the reign of Pax Britannica involved a significant element of restraint, and did not extend to actively denying others access to the seas or naval capabilities that it found threatening. Instead, the Royal Navy's policy focused primarily on three things: (1) protecting British traders' lives and property by suppressing piracy, despots, and uprisings in the colonies (e.g., port closures and takeovers) that threatened to disrupt free trade; (2) suppressing the slave trade; and (3) charting the oceans.[212] Great Britain also sought to enforce the three mile territorial sea.[213] In these policies, it enjoyed both domestic and international support, including from the other great powers, which coincided sufficiently to condone unilateral British military action.[214] By undertaking foreign military initiatives only in pursuit of long-established, narrowly focused policies for which there was widespread support, Great Britain was able to use its power to promote its policies, and to do so with a significant degree of legitimacy.

As important is what the Royal Navy did *not* do: although it did employ "gunboat diplomacy" on some occasions, and did irritate other nations by trying to restrict free trade by neutrals in wartime, in general it did not impose a British peace on the world—"there was no effort to stop the French from entering Algiers in 1830, or Mexico in 1863 or Indo-China in the sixties, nor to keep the Americans out of Japan in the fifties, or the North from blockading the South during the American Civil War."[215] In the view of British leaders, effective use of the Royal Navy meant a policy of limits and restraint. The selective use of gunboat diplomacy gave considerable added weight to British policies with relatively little involvement of British military forces in actual combat—hence the 100 years of so-called Pax Britannica. According to historian Gerald Graham, "it was this general desire to avoid war"—and the restraint which that entailed—"that made the so-called age of *Pax Britannica* possible."[216]

The U.S. role in space proposed by SPACECOM and its supporters would be far more overwhelming than that of the British navy in centuries past. The more accurate parallel to Pax Britannica for the United States in space would not be preemptive denial of access to space by others that might threaten U.S. interests in the future, but rather the development of a security and economic regime in space, around a relevant organizing principle, that

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Some analysts argue that, as part of an effort to develop legitimate multilateral naval forces, "the law of the sea will need to repudiate unilateral uses of warships for upholding the freedom of the seas." Joshua Handler, *Denuclearizing and Demilitarizing the Seas*, *in* FREEDOM FOR THE SEAS, *supra* note 124, at 420, 433.

212. *See generally* SEMMEL, *supra* note 159.

213. CHURCHILL & LOWE, *supra* note 50, at 60.

214. SEMMEL, *supra* note 159, at 1-2.

215. GERALD S. GRAHAM, THE POLITICS OF NAVAL SUPREMACY: STUDIES IN BRITISH MARITIME ASCENDANCY 119 (1965).

216. *Id.*

enjoys international consensus. The essential contribution of British hegemony was to promote and enforce the development of a "regime" around a new principle—freedom of the seas—that was relevant to the security and economic interests of the times and hence enjoyed widespread support. The relevant lesson of Pax Britannica for space in the twenty-first century is not the freedom of the seas principle itself; rather, it is the model Great Britain provides of a hegemon leading the way in promoting a transition to new economic and security principles. Crucial to British success in its role as a "benign hegemon" was the support and legitimacy its policies enjoyed. U.S. plans for space dominance do not currently enjoy this kind of international support or consensus. They show little prospect of doing so any time soon.

A final argument of space weapons supporters draws generally on historical analogies to demonstrate that the weaponization of space is "inevitable." According to a U.S. Air Force analyst, "there are historical reasons for suspecting that the weaponization of space is as inevitable as was the weaponization of the land, sea, and air media of warfare."[217] The Rumsfeld Commission report trades heavily on the inevitability argument.[218] Whether desirable or not, these proponents argue, the weaponization of space is going to happen. They believe the first state to place weapons in space will have a great advantage over rivals, so if some nation is going to be first, it should be the United States.

Arguments from technological determinism or human nature are popular (and are certainly in the interests of the U.S. Air Force). However, although land, sea, and air have indeed become battlefields, there is no inherent reason that space must become one, too. As Karl Mueller argues, because militarization proceeded differently on land, sea, and air, facile analogies between these domains and military space do not predict whether there will be weapons in space.[219] Large areas of the planet, he notes, have been set off-limits to nuclear weapons (e.g., the seabed, the Antarctic, nuclear weapons-free zones), as has the Moon, and some weapons have been prohibited (e.g., biological and chemical weapons, and landmines).[220] Finally, space itself has so far remained unweaponized. As the current debate over the desirability of space weapons shows, the forty-five year tradition of superpower restraint with regard to weapons in space has become a politically significant norm. As Mueller notes, in the very near term, say a decade or more, space weaponization is not inevitable "for the simple reason that only the United States possesses the resources and capabilities that would be required to deploy space weapons in a serious way."[221] Whether space is weaponized in

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217. BELL, *supra* note 24. *See also* OBERG, *supra* note 5, at 143-52.

218. *See* COMM'N TO ASSESS U.S. NAT'L SEC. SPACE MGMT. & ORG., REPORT OF THE COMMISSION TO ASSESS UNITED STATES NATIONAL SECURITY SPACE MANAGEMENT AND ORGANIZATION 100 (2001), http://www.space.gov/docs/fullreport.pdf ("We know from history that every medium—air, land and sea—has seen conflict. Reality indicates that space will be no different.").

219. MUELLER, *supra* note 22.

220. *Id.*

221. *Id.*

the longer term will certainly depend in large measure on the decisions of U.S. leaders in the coming decade.[222]

For several reasons, then, the analogy between freedom of the seas and the military use of space is a false one. Transit of space by orbiting weapons is not nearly as innocent as transit over the oceans, satellites are not like ships at sea, and the proposed U.S. role in space would be far more overwhelming than the role of Great Britain at sea during the nineteenth century. It is difficult to avoid the conclusion that, in reality, what SPACECOM and its supporters actually want is a version of *mare clausum,* in which the United States controls space to the full extent of U.S. power. Their use of the freedom of the seas analogy is, in the end, disingenuous: the aspect of the nineteenth-century British experience of which they are actually most enamored is the notion of empire, not the freedom of the seas principle. Mahan's theory of control of "chokepoints" is a theory of empire, not a theory of free trade and commerce.[223] Doctrines centering on control and domination are theories of empire and war, not theories of freedom. As one Air Force analyst admits, the development of space forces to protect assets in space "challenges the notion of 'freedom of space,' and 'space for peaceful purposes,'" because, as he notes, in wartime, nations are quick to abandon freedom of the seas.[224]

The solution for the future of space is not to continue using an easy but outdated analogy from the nineteenth century—which fails to effectively address the problem of modern weapons on the ocean, let alone in space—but rather to develop a new, more appropriate normative regime for space. None of the existing analogies provides an adequate basis for devising rules for space. Principles of accountability, fairness, and equity in international law and practice, especially regarding the use of the world's resources, though still weak, are more developed today than they were a hundred years ago and can no longer be ignored.[225] In sum, the circumstances giving rise to rule Britannia no longer prevail, either on the high seas or in outer space. New guiding principles, more suited to the conditions of the twenty-first century, are needed.

IV. A NEW APPROACH TO RULEMAKING FOR OUTER SPACE

A. *Does a Superpower Need Rules? The Advantages of Legal Regimes*

Why should a superpower need rules—especially if it is the only superpower? Actors create rules for several reasons: rules facilitate cooperation, coordinate action, stabilize expectations about the future, and help actors realize their interests and achieve their goals in the context of an interdependent world. It is often argued that weak states have a stronger preference for rules—"rules are the last refuge of the weak"—because rules constrain the power of the strong. The strong can get what they want through

222. *Id.*

223. *See supra* note 138 and accompanying text.

224. Michael V. Smith, Ten Propositions Regarding Spacepower 3 (2001) (unpublished M.A. thesis, Air University), *at* http://usafaspace.tripod.com/other/ten_propositions.pdf.

225. *See* FRANCK, *supra* note 62.

the exertion of power and coercion of weaker actors, while the weak must rely on the protection of the law. However, even hegemonic states find significant advantages—for both "soft" and "hard" power reasons—in having rules, and therefore support rules that promote their interests.[226]

Rules or regimes can come into being in a number of ways. They can be imposed through coercion or power, they can be negotiated, or they can arise spontaneously (in the manner of customary international law).[227] The trend today is much more toward negotiated international law. In recent years, NGOs and private actors (e.g., firms) have played a much greater role in the creation of rules, a development relevant to the outer space issue.[228] There has also been a trend toward "soft law"—politically but not legally binding agreements, an area of lawmaking in which nonstate actors can participate.[229]

Empirically, international law has traditionally reflected the interests of the dominant powers. For example, the United States got its way most of the time in the negotiations over the post-World War II economic order.[230] In the case of the law of the sea, after holding out for more than a decade, the United States was able to secure substantial revisions to the deep seabed mining provisions of the LOS Convention, even after it had entered into force.[231] On the basis of this, the Clinton administration announced in 1994 its intention to adhere to the convention, and sent it to the Senate, where Jesse Helms, Chairman of the Senate Foreign Relations Committee, blocked further action.[232] Other industrialized countries, however, including Great Britain, France, Japan, Canada, and Russia, also objected to aspects of the deep seabed mining provisions and largely supported the changes pushed by the United States. They delayed their ratifications until recently.[233] Finally, "almost single-handedly, the United States was able to keep a firm commitment to reduction of carbon dioxide emissions out of the Framework Convention on Climate Change in Rio in 1992."[234]

However, hegemonic rulemaking is losing its monopoly on law formation. As noted earlier, principles of equity, accountability, and fairness are increasingly accepted principles of international law.[235] Additionally,

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226. John Ikenberry & Charles Kupchan, *Socialization and Hegemonic Power*, 44 INT'L ORG. 285, 285-87 (1990).

227. Oran Young, *Regime Dynamics: The Rise and Fall of International Regimes*, 36 INT'L ORG. 277, 281-85 (1982).

228. *See* A. CLAIRE CUTLER ET AL., PRIVATE AUTHORITY IN INTERNATIONAL AFFAIRS (1999); Jessica T. Matthews, *Power Shift*, FOREIGN AFF., Jan./Feb. 1997, at 50.

229. For an extended discussion on this point, see the collection of essays in COMMITMENT AND COMPLIANCE, *supra* note 139.

230. John Ruggie, *Embedded Liberalism and the Postwar Economic Regimes*, *in* CONSTRUCTING THE WORLD POLITY: ESSAYS ON INTERNATIONAL INSTITUTIONALIZATION 62 (1998).

231. BROWNE, *supra* note 181, at 1, 6.

232. Miles A. Pomper, *Administration Revives Effort To Get Law of the Sea Treaty Under Way in Senate*, CONG. Q. WKLY., Aug. 15, 1998, at 2248.

233. The contested elements included: a decisionmaking process in the International Seabed Authority that did not give industrialized countries a blocking coalition; provisions requiring the mandatory transfer of technology; and the incorporation of a non-market economic philosophy. BROWNE, *supra* note 181, at 3.

234. CHAYES & CHAYES, *supra* note 140, at 6 (discussing the United Nations Framework Convention on Climate Change, May 9, 1992, S. TREATY DOC. NO. 102-38 (1992), 1771 U.N.T.S. 108).

235. *See* FRANCK, *supra* note 62.

although power remains important, it is increasingly diffused by more participatory, multilateral decision-making structures. For example, the creation of the World Trade Organization significantly democratizes rulemaking in international trade. The international treaty-making process in general leaves a good deal of room for accommodating divergent interests. Multilateral negotiating fora provide opportunities for weaker states to organize blocking coalitions. In both UNCLOS III and the global climate negotiations, groups of small states played key roles.[236] The Law of the Sea Treaty received the requisite number of ratifications to enter into force in 1994, *before* most of the major powers had ratified it—a factor encouraging the United States to reconsider its position on the treaty.[237] The 1997 Landmine Ban Treaty[238] was achieved over the objections of the United States. It currently appears that the majority of states who support the establishment of legal commitments under the Kyoto Protocol on global warming may seek to proceed without the United States.[239]

The trend toward multilateral rulemaking might suggest that rules established on the basis of principle and equity are more efficient and enduring than rules imposed by power. The issue is complex, however. On the one hand, rules imposed by power presumably enjoy the support of the dominant actors and therefore are probably quite enduring and stable. Rules established on the basis of principle and equity presumably entail negotiations among a large group of actors with diverse interests. The outcome reflects some lowest common denominator and therefore leads to vaguer and more incoherent rules, which are inherently unstable over the long haul. This is often the fate of many large multilateral negotiations, especially in the initial phases of negotiation on an issue.

However, most analyses in the literature suggest that pure hegemony is also inefficient. As most hegemons discover, inducing obedience purely through coercion is costly. Chayes and Chayes note that "[n]orms and rules offer one way to reduce costs, so they are prominent even in hegemonic systems"; however, "the norm structure will have this effect only if it is to some extent truly normative, and not just a disguise for willful command. Thus even the hegemon will have to accept some attributes of legitimacy to make the norm system work."[240] In reality, enduring and viable legal regimes are neither purely power-based nor can they entirely ignore power in favor of

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236. CHAYES & CHAYES, *supra* note 140, at 7.

237. Galdorisi, *supra* note 204, at 26-27.

238. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, Sept. 18, 1997, 36 I.L.M. 1507 (1997). For a discussion of U.S. objections, see Foreign Press Center Briefing, Lincoln Bloomfield, Assistant Secretary of State, Bureau of Politico-Military Affairs, New Developments in the U.S. Approach to Landmines (Feb. 27, 2004), *at* http://fpc.state.gov/fpc/29979.htm.

239. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 (1998). On the Protocol's future prospects without United States participation, see *Bringing the Kyoto Protocol Into Force*, Mapleleafweb, *at* http://www.mapleleafweb.com/features/environment/kyoto/08.html (last visited Apr. 21, 2004).

240. CHAYES & CHAYES, *supra* note 140, at 127-8. On norms as a source of hegemonic power, see generally Ikenberry & Kupchan, *supra* note 226.

pure equity. To be both legitimate and enduring, they must recognize considerations of both power and equity.

B. *The United States and the Law of the Sea Treaty*

The Bush administration's decision in November 2001 to adhere to the LOS Treaty provides a good example of the consequences of interdependence and of how even hegemonic states find it useful to support rules. This was a surprising decision given the Bush administration's well-known skepticism of international law and multilateral treaties in general. On November 27, 2001, the U.S. Ambassador to the U.N. Economic and Social Council announced that the treaty met "U.S. national security, economic, and environmental interests," and informed the Council that President Bush supported U.S. accession to the treaty, nineteen years after it had been negotiated and seven years after it had gone into effect.[241]

Several factors appear to be behind this decision. First, the treaty had strong support from the Navy and oil, mining, shipping, and fishing industries, as well as environmentalists and marine scientists. U.S. Navy officials argued in favor of it on the ground that it would secure rights of navigation that would allow U.S. naval forces to transit quickly to military theaters.[242] Second, U.S. acceptance of the treaty allows it to participate in several institutions created by the treaty, and thereby to exert more influence on ocean-related commissions and tribunals. The most important of these is the Commission on the Limitations of the Continental Shelf, the body responsible for establishing a secure regime for the exploitation of oil and other non-living resources on the continental shelf.[243] The treaty provides the only recognized means of gaining authority over this area. The United States has a strong interest in this Commission since it seeks to extend its continental shelf claim beyond 200 miles in the Bering Sea. Other important treaty institutions include dispute resolution tribunals and the International Seabed Authority.[244] U.S. nationals can only participate in these institutions if the United States is a party to the treaty.[245]

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241. Siv, *supra* note 142.

242. *See* Capt. George Galdorisi, *It's Time To Sign On*, PROCEEDINGS (U.S. Naval Inst.), Jan. 1998, at 51; Galdorisi, *supra* note 204.

243. In March 2004 testimony before a Senate panel, John F. Turner, U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, urged support for the treaty and emphasized that Russia and other countries might start staking out mining rights while the United States was not participating. Bruce Odessey, *State Department Official Asserts Support for U.N. Law of the Sea* (Mar. 23, 2004), *at* http://usinfo.state.gov/gi/Archive/2004/Mar/24-878973.html.

244. Annex VI of the LOS Convention establishes the International Tribunal for the Law of the Sea, including the Seabed Disputes Chamber. LOS Convention, *supra* note 2, Annex VI, 1833 U.N.T.S. at 561. Part XI of the Convention establishes the International Seabed Authority. *Id.* at Part XI, 1833 U.N.T.S. at 445.

245. On Bush administration support for the treaty, see Adm. Michael G. Mullen, Vice Chief of Naval Operations, On the Law of the Sea Convention, Statement Before the Senate Committee on Foreign Relations (Oct. 21, 2003), *at* http://foreign.senate.gov/testimony/2003/MullenTestimony031021.pdf; William H. Taft, Legal Adviser, U.S. Department of State, Accession to the 1982 Law of the Sea Convention and Ratification of the 1994 Agreement Amending Part XI of the Law of the Sea Convention, Testimony Before the Senate Foreign Relations Committee (Oct. 21, 2003), *at* http://www.state.gov/g/oes/rls/rm/2003/25573.htm; John F. Turner, Assistant Secretary of State for

Additionally, the diplomatic confrontation between the United States and China in early 2001 after a U.S. surveillance plane flew over China's EEZ may have impressed upon the Bush administration the value of the substantive principles and concepts of the treaty.[246] As legal scholars observed, the U.S. position that this overflight was lawful would have been strengthened if the United States had been able to cite, in its support, Article 58 of the LOS Treaty, which preserves the right of states to conduct military activities within the EEZ of other states, as on the high seas.[247] China had already accepted the LOS Convention, as had 141 other nations.

More recently, the Bush administration has emphasized that ratification will promote its initiative against weapons proliferation by promoting cooperation with other nations under a common legal framework for boarding and intercepting vessels.[248] Last, but not least, U.S. membership in the LOS Treaty provides the opportunity to influence the evolution of this agreement through its interpretation by state practice. Being on the outside, looking in, inhibits that possibility.

Given SPACECOM's narrow interpretation of U.S. interests in space and dismissive attitude toward international law, the U.S. military's strong support for the LOS Treaty is worth noting. The Pentagon's 1998 annual report to Congress stated that "the Department of Defense strongly supports U.S. accession" to the LOS Convention.[249] It explained that "[a] stable legal regime for the world's oceans that recognizes traditional navigational rights and freedoms is essential to U.S. national security."[250] A global power, regularly moving military forces around the world, depends on mobility and freedom of navigation. Worldwide acceptance of the treaty "is the best way to ensure these rights are recognized, respected, and given the force of written law."[251] In the Pentagon's view, reliance on customary law would serve U.S. interests much less effectively. The LOS Convention is preferable because it confirms the traditional high seas freedoms of navigation and overflight, details passage rights through international straits, and reduces prospects for disagreements with coastal states during operations.[252]

These provisions are crucial for the U.S. Navy, which is currently restricted from routinely operating in many perceived strategic areas due to

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Oceans and International Environmental and Scientific Affairs, Accession to the 1982 Law of the Sea Convention and Ratification of the 1994 Agreement Amending Part XI of the Law of the Sea Convention, Testimony Before the Senate Foreign Relations Committee (Oct. 21, 2003), *at* http://www.state.gov/g/oes/rls/rm/2003/25572.htm.

246. *See* Christopher Drew, *Old Tactics May Pull the Rug from the U.S. Claim to Plane*, N.Y. TIMES, Apr. 4, 2001, at A1; Robert Marquand, *U.S. and China Talk Planes, Fly Zones, Fair Play*, CHRISTIAN SCI. MONITOR, Apr. 18, 2001, at 1; William Burke, *International Leadership by the U.S. in Marine Affairs*, *at* http://www.sma.uwashington.edu/research/pog/international_leadership.html (last visited May 2, 2004); Frederic L. Kirgis, *United States Reconnaissance Aircraft Collision with Chinese Jet*, ASIL Insights (Apr. 2001), *at* http://www.asil.org/insights/insigh66.htm.

247. ROACH & SMITH, *supra* note 204, at 407.

248. Odessey, *supra* note 243.

249. WILLIAM S. COHEN, DEP'T OF DEFENSE, ANNUAL REPORT TO THE PRESIDENT AND THE CONGRESS 1998, app. H, http://www.defenselink.mil/execsec/adr98/apdx_h.html.

250. *Id.*

251. *Id.*

252. U.S. Dep't of State, *The Convention on the Law of the Sea* (June 1998), *at* http://www.state.gov/www/global/oes/oceans/980610_los.html#national.

excessive maritime claims. Several countries—including China, India, Pakistan, and North Korea—require prior notice or permission for the innocent passage of warships within twelve nautical miles of their coastlines, and others require notice before passing through the EEZ. The Navy is currently forced to rely on bilateral and multilateral agreements with local governments to pass through such areas. The LOS Treaty will minimize the need for these confusing, overlapping, and sometimes undependable agreements.[253] Under the treaty, all foreign commercial and military vessels are allowed innocent passage through sea lanes, coastal waters, and EEZs.[254]

Supporters of space weapons point to the role of strong U.S. naval forces in keeping the sea lanes open and enforcing freedom of the seas as a model for a similar U.S. policy in space. Yet the Navy itself has concluded that a stable international legal regime provides a less costly and dangerous way to ensure freedom of the seas than sole reliance on unilateral "enforcement" through its Freedom of Navigation Program (FON). Under this policy, the Navy deliberately challenges, through diplomatic protests and assertive fleet operations, what it sees as excessive coastal claims over the oceans. The Navy has found these unilateral demonstrations of resolve increasingly risky because of their tendency to elicit strong and potentially dangerous reactions from other states.[255] They have also stretched the Navy thin, and other nations have been reluctant to join in FON operations. The FON program has thus become physically, politically, and financially costly for the Navy. In the Navy's view, the LOS Treaty, by reducing the number of coastal state claims and pressure on the Navy to act unilaterally, provides a more cost-effective and reliable means of promoting U.S. interests. As the Pentagon argued, "relying solely on diplomatic and operational challenges is less desirable than establishment, through the LOS Convention, of accepted norms of behavior."[256]

In short, the Bush administration calculated that the LOS Treaty would advance U.S. interests by stabilizing rights and responsibilities regarding ocean activities, and that the United States would be better off inside rather than outside it. Such developments in multilateral decisionmaking are the result of increasing recognition that rules are more stable and efficient when stakeholders, both powerful and weak, are involved in the rulemaking process.

C. *An "LOS Treaty" for Outer Space*

Space, like the oceans, provides for a combination of military and civilian uses. If the United States were to reason from this example and support an equivalent to the LOS Treaty for space, what components already exist, and what would have to be created? The basic set of general principles

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253. Brett Wagner & Philip Lofrumento, *It's Time To Ratify the Law of the Sea Treaty*, WASH. Q., Summer 1999, at 17.

254. *Id.*

255. U.S. warships and aircraft have asserted rights and freedoms in all oceans against perceived excessive claims by more than fifty countries at the rate of thirty to forty assertive challenges per year. Galdorisi, *supra* note 204.

256. U.S. Dep't of State, *supra* note 252.

that already exist includes treating space as a commons, preserving it for peaceful purposes, maintaining freedom of access and use, and promoting responsibility and cooperation in its use for the benefit of all. Space is the "province of all mankind," and states are obliged to defer to the international community's interests in space, and to share the benefits of space.[257] At the level of rhetoric, at least, many of the basic principles are in place.

Important elements are lacking, however, and would have to be created. First, clear definitions of these principles and specific guidelines for operationalizing them in practice are needed. As I noted earlier, the LOS Treaty takes significant steps in these directions with respect to the oceans, but still falls short, especially in the security area. A space regime will need to go further. Second, old analogies such as the freedom of the seas no longer suffice, and need to be replaced with several new organizing principles: comprehensive security, equal protection in space, and equity in access to space. Here, the LOS model needs to be updated. Third, a better articulated space regime will need more effective, collective decisionmaking processes, and mechanisms to monitor and enforce compliance with the rules. Here, the LOS Treaty provides a good model—the LOS process, for example, resulted in new decisionmaking tribunals such as the Continental Shelf Commission and deep seabed mining regime, and a dispute resolution mechanism with "teeth." Finally, a specific political process for negotiating a more comprehensive regime will be needed. Here, the LOS Treaty provides one of several possible models, though perhaps the least likely one given today's political environment.

1. *New Principles*

A more elaborated regime for space will require a shift away from an operational framework based largely on a "freedom of the seas" analogy and deterrence-based notions of security, to one based on principles of comprehensive security, equal protection in space, and equity in access to space resources. A broader definition of security would go beyond a purely military approach to include resource and environmental issues, as well as economic and development concerns. Such an approach is crucial for space, which has transnational and planetary effects. Military, environmental, and economic issues are inherently linked in space. Testing ASAT weapons in space, for example, could produce thousands of pieces of space debris, which could make it much riskier to put either commercial or military satellites into low-earth orbits.[258] Protecting space from environmental damage will be central to continuing enjoyment of its economic and security benefits. As the

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257. Outer Space Treaty, *supra* note 27, art. I, 18 U.S.T. at 2412-13, 610 U.N.T.S. at 207-08. For competing interpretations of the "benefit and interest of all countries" provision, see CHENG, *supra* note 43, at 234-36.

258. Links between the environment and military activities include environmental contamination from weapons production and development, the environmental consequences of warfare, and environmental degradation as a cause of conflict. Eric K. Stern, *The Case for Comprehensive Security*, *in* CONTESTED GROUNDS: SECURITY AND CONFLICT IN THE NEW ENVIRONMENTAL POLITICS 127, 135-38 (Daniel Deudney & Richard A. Matthew eds., 1999).

1995 Commission on Global Governance stated, "global security must be broadened from its traditional focus on the security of states to include the security of peoples and the planet."[259]

An effective operational regime for space also will need to reflect principles of reassurance rather than threat and deterrence. It will need to address the issue of the uneven distribution of security and protection among states, especially with respect to space assets. The United States possesses hugely asymmetrical capabilities to wage war and defend itself and its allies. But these tremendous capabilities, against which other states possess little defense, increase the vulnerability of others and create incentives for asymmetric warfare. Most significantly, vast changes in the nature of threats today make deterrence a much less relevant approach to security than in the past. In an era of globalization where weapons proliferation, terrorism, and unconventional warfare—rather than attack by another state—pose the major security threats, traditional concepts of deterrence and confrontational force postures are increasingly dysfunctional and even counterproductive.[260] Deterrence policies (including missile defense, which, contrary to the claims of its supporters, does not eliminate deterrence) exacerbate suspicion and hostility, create incentives for arms races, and undermine crisis stability. Instead, policies for space should emphasize principles of common security and reassurance rather than national security and deterrence. Most nations would like guarantees that space will not be used against them. The long-term stability of the space regime depends on its being organized as a regime of collective protection—of both states and assets—rather than as a regime of nationally organized threat and deterrence.

Finally, principles of equity will also need to be central elements of an elaborated space regime. At the time the Outer Space Treaty was negotiated, the space powers accepted the "province of all mankind" concept on the general assumption that it would not really burden their programs and, in any case, that they themselves would determine unilaterally how it was to be implemented. Technically, the "province of all mankind" does not mean the same thing as the "common heritage of mankind," which formally applies only to the Moon. The province of all mankind is a relatively general principle that says that all nations have the nonexclusive right to use space. The notion of common heritage is a more specific principle (although with uncertain scope) that refers to the legal status of property rights. It implies five things: (1) a resource "shall not be appropriated" (i.e., it can be used but not owned); (2) the use of the commons will be managed by an international authority; (3) benefits will be actively shared; (4) the commons will be reserved for peaceful purposes; and (5) reservation will be for "the benefit and interest of mankind."[261]

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259. *Id.* at 133.

260. Nina Tannenwald, *Arms Control Policy in a Time Warp*, ETHICS & INT'L AFF., 2001 No.1, at 51. For an extended development of this argument see STEINBRUNER, *supra* note 206, at 23-132

261. KEMAL BASLAR, THE CONCEPT OF THE COMMON HERITAGE OF MANKIND IN INTERNATIONAL LAW xx-xxi (1998).

Because of the exhausting controversy over the common heritage principle during the seabed negotiations, and the small number of ratifications of the Moon Treaty, the international community is unlikely to extend formally the common heritage principle to all of space anytime soon, although many developing countries and environmental law experts would support this. Yet it remains a politically important and relevant concept, especially in its "new and improved" 1994 interpretation. In the renegotiated deep seabed mining regime, the International Seabed Authority (ISA) was restructured along market lines, allowing private economic activity in accordance with market principles—including the transfer of technology through the open market on commercial terms and "chambered" voting. The latter ensures that the United States and two other industrialized states can make up a blocking vote in the ISA Council.[262] Under this new interpretation, the concept was quite acceptable to the western states. Indeed, despite the conflict over the principle in the LOS Treaty negotiations, the principle itself was never rejected, even by the United States and other western countries dissatisfied with the treaty's provisions for the Deep Seabed Mining Authority. The dispute was over how to apply it. No government denied the need to implement the common heritage principle in seabed activities through a global redistributive scheme. Rather, some states asserted that this could be achieved more effectively by private enterprise than by encumbering international management.[263]

In the wake of the revised seabed agreement,[264] both the status and the scope of the common heritage principle today remain uncertain. It remains a highly contested and controversial legal concept. Legal scholars, environmental advocates, and states have variously proclaimed its application more broadly to "meteors, the geostationary orbit, the spectrum of radio-frequencies used for space communication, solar energy, low earth orbits . . . various environmental resources such as endangered species, genetic resources, tropical rain forests, the atmosphere, all food resources, marine living resources and cultural heritages."[265] This suggests that there is no particular understanding that the concept is reserved only for mineral extraction. Indeed, advocates of the concept saw its application to seabed mining as merely the first step in what should eventually become a broad application to the global commons, leading to a revolution in environmental

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262. BROWNE, *supra* note 181, at 5. The 1994 Annex also guarantees the United States a seat on the Council, which the original convention did not. The four-chambered voting procedure entails that a majority of any of the following can block a decision: (1) four major minerals importing states; (2) four of the largest eight states with investments in deep seabed mining; (3) four major minerals exporting countries; or (4) a group of developing countries. *See, e.g.*, Bernard Oxman, *Law of the Sea Forum: The 1994 Agreement on Implementation of the Seabed Provisions of the Convention on the Law of the* Sea, 88 AM. J. INT'L L. 687, 690-91 (1994).

263. FRANCK, *supra* note 62, at 398. The interim U.S. law authorizing seabed mining outside the LOS Treaty regime provided for redistributive payments into a trust fund for the benefit of the international community and the least developed states. So did similar provisions in the German interim law.

264. Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, July 28, 1994, 1836 U.N.T.S. 3 [hereinafter Revised Seabed Agreement].

265. BASLAR, *supra* note 261, at xx.

management. Were the common heritage concept applied to space, it could in principle be applied to the economic benefits of all space activities, not simply resource extraction from celestial bodies.

Although no government has rejected the common heritage principle in the abstract, so far no governments have exhibited any willingness to accept it as a mandatory legal obligation for activities in common areas. The majority of legal writers hold that it is primarily a reflection of a political aspiration and a moral commitment, and that it does not represent substantive international law. At the same time, it does possess an "emerging normative quality."[266] It has helped to promote notions of stewardship and the sharing of benefits that are now widely accepted as essential to the legitimacy of any global commons management system. Although the United States objected to many of the Moon Treaty's common heritage provisions as being too "socialistic," it indicated throughout the negotiations that it was not opposed to the basic idea of sharing benefits with the Third World or to redistributing a small percentage of its wealth. However, one consequence of the 1994 Revised Seabed Agreement[267] is that the operational interpretation of any application of the common heritage concept today will be informed by a liberal market philosophy rather than by the command economy-style redistributive aspirations of the demands in the 1970s for a New International Economic Order that shaped the original interpretation of the common heritage principle. Principles of efficiency and practicality will limit aspirations for redistribution and justice.

In sum, although the phrase "common heritage of mankind" itself is unlikely to make it into an elaborated space regime, its component elements reflect basic principles of equity, accountability, and fairness in the use of resources that will be essential elements of a more specified regime for space. The rest of the world is directly concerned and should have a say in the options that are chosen for space projects and in the distribution of the benefits of space. In pursuit of the common benefit, the members of the international community must be able to determine the conditions under which the exploitation or use of the resources is to take place. At a minimum, the peaceful uses and province of all mankind principles imply that freedom of use is not unlimited, especially for warfare. More broadly, the province of all mankind could be expanded to incorporate a notion of sustainable development.[268] At any rate, the rules of space will need to reflect a global, rather than national, public interest, and not merely the interests of a few spacefaring governments and corporations.

Thus, an elaborated regime for space will need to be supplemented by principles of equity and new principles of security. However, these principles will need to be given content through specific operational rules. This will entail, in particular, setting clearer limits on the notion of freedom of

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266. For an extended discussion of the common heritage principle as it relates to the law of the sea, see *id.* at 221-42.

267. Revised Seabed Agreement, *supra* note 264.

268. Tan, *supra* note 30, at 164.

exploration and use, and on peaceful purposes. I discuss these issues in the next section.

2. *New Rules: Operationalizing Peaceful Purposes*

The controversy over the term "peaceful purposes" as regards outer space reflects different conclusions about how to manage military competition. At one end of the spectrum, advocates of "peace through strength" perspectives, such as SPACECOM, believe security is best achieved through self-help and unilateral reliance on a posture of overwhelming military force to deter challenges in advance. At the other end of the spectrum, advocates of demilitarization believe security is best advanced by eliminating all forms of military activity from space. In the middle, advocates of security through mutual deterrence and arms control divide military activities into destabilizing and stabilizing activities. In this view, stabilizing military activity (such as monitoring of arms control agreements) should be continued, while developing new weapons technologies that upset the strategic balance should be avoided.[269]

The majority of the international community clearly views the weaponization of space as inconsistent with peaceful purposes. This leaves two other possible interpretations of peaceful purposes: total demilitarization, or some form of space sanctuary, understood as a ban on weapons in space and possibly constraints on other military activities.

Total demilitarization. This would follow the model of the 1959 Antarctic Treaty[270] to ban military involvement in space altogether. It would have the virtue of a strong prohibition on arms in space and greater logical clarity. Advocates of this position charge that any ban limited to weapons rather than including all military activities will have the effect of legitimizing the military use of near-earth space. However, as Rebecca Johnson has noted, the challenge of this position is that since passive military activities are already carried out in space, a total demilitarization of space would be a "radical step" and would probably depend on a "far-reaching and deeper demilitarization of international relations."[271] Further, the difficulty of distinguishing between civilian and military uses of satellites would make monitoring difficult. While a majority of the satellites in space "do have a military purpose, many also play a role as 'national technical means'" and therefore play an important role in monitoring and verification of arms control and nonproliferation agreements, an important stabilizing effect.[272] Just about any use of space can be useful for military purposes, including weather, navigation, communications, and remote sensing.

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269. Most of the destabilizing functions are located in low-earth orbit. In contrast, "[a]lmost all of the functions provided by satellites in GEO [geosynchronous orbit] are of a stabilizing nature. Examples are launch warning, detection of nuclear explosions, and rapid worldwide communications." George Lindsey, Arms Control in Space, Paper Presented at the Sixth ISODARCO Beijing Seminar on Arms Control (Nov. 1998), *at* http://www.nautilus.org/library/security/papers/lindseyISODARCO.pdf.

270. Antarctic Treaty, *supra* note 52.

271. Johnson, *supra* note 37.

272. *Id.*

For the foreseeable future, a regime promoting a purely nonmilitary approach to outer space would likely be purely aspirational, lacking clear definitions or compliance measures, since the dominant spacepowers are unlikely to agree to a specified regime that eliminates passive military activities. Thus, such a regime may have little effect on the activities of the spacepowers, leading to what many non-spacefaring nations would perceive as a discriminatory regime.[273] Though it may remain the aspiration of some groups of states, total demilitarization of space appears unlikely.

Space sanctuary. It is likely—indeed almost inevitable—that "non-aggressive" (rather than "nonmilitary") will continue to be the operating interpretation of "peaceful purposes." Even so, agreement will still be needed on what counts as non-aggressive military activity. The likely option is a regime that recognizes some role for the military use of space but not its weaponization. This view, often referred to as "space sanctuary," would prohibit the testing and deployment of weapons in space, as well as ASAT weapons deployed on Earth.[274] It draws on the 45-year tradition among the spacepowers of refraining from stationing weapons in space. Despite the lack of progress on arms control in space since the 1950s, the most remarkable feature of the current regime for space has been this tradition of restraint in weaponizing space. According to Theresa Hitchens, this "unspoken pact" or "gentlemen's agreement" has "penetrated the international psyche so deeply" that most countries, including the two superpower rivals during the Cold War, also refrained from deploying earth-based weapons that could shoot down satellites (although they have pursued development of such weapons).[275] Hitchens may overstate the robustness of this tradition, given the strong elements of contingency in its origins. Nevertheless, it has become a widely supported norm of the international community. It thus provides an important precedent for developing a more formalized notion of space sanctuary.

What accounts for the lack of an arms race in space so far? Explanations emphasize a set of military, technical, political, organizational, and ideational factors. According to Paul Stares, the explanation lies in the "convergence of national interests, military disincentives and technical constraints, which were buttressed at important times by *formal* agreements."[276] U.S. policymakers recognized that space weapons offered few military advantages. They faced serious technical constraints, and also wanted to project a peaceful image of the U.S. space program. Organizational factors reinforced these considerations, as the Air Force interest in space declined for a lengthy period during the 1960s and 1970s. Other explanations emphasize the common

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273. S. Chandrashekar, *Problems of Definition: A View of an Emerging Space Power*, *in* PEACEFUL AND NON-PEACEFUL USES OF OUTER SPACE, *supra* note 34, at 77, 92.

274. The most developed statements of this view have come from military writers. *See* Deblois, *supra* note 19; Ziegler, *supra* note 19. Philip Coyle and John Rhinelander define space sanctuary as total demilitarization, but this is less consistent with common usage. *See* Philip E. Coyle & John B. Rhinelander, *Drawing the Line: The Path to Controlling Weapons in Space*, DISARMAMENT DIPLOMACY, Sept. 2002, http://www.acronym.org.uk/dd/dd66/66op1.htm.

275. Theresa Hitchens, *Rushing To Weaponize the Final Frontier*, ARMS CONTROL TODAY, Sep. 2001, at 16.

276. PAUL B. STARES, THE MILITARIZATION OF SPACE: U.S. POLICY, 1945-1984 237-38 (1985).

interest of the superpowers in avoiding an ASAT race.[277] Both the United States and the Soviet Union recognized the mutual benefits of reconnaissance satellites and reached a tacit agreement to refrain from developing weapons to counter them. Satellites provided mutual reassurance and thus strengthened the system of stable nuclear deterrence. As Stares emphasizes, the practice of keeping space free of weapons has been reinforced over the years by formal agreements (e.g., the 1963 U.N. General Assembly resolution banning weapons of mass destruction from space,[278] later codified in the Outer Space Treaty[279]; and the ABM treaty.[280]) The international community has also repeatedly reaffirmed support for the nonweaponization norm in numerous U.N. resolutions and diplomatic statements.[281]

Today, some of these conditions no longer hold. Perhaps somewhat surprisingly, changes have occurred mainly on the organizational and policy—not the technical—side. The Air Force has rediscovered a major organizational interest in space.[282] The continued U.S. commitment to projecting a peaceful image in space is in serious doubt, especially after U.S. withdrawal from the ABM treaty. Technical and strategic constraints have changed much less than imagined, however. While U.S. space technological capabilities have advanced significantly, serious technical constraints on space weapons remain. Additionally, the military advantages of space weapons remain unclear. Finally, given the international community's increasing use of space, the common interest in avoiding an arms race in space is even stronger today. For the United States, the strategic disadvantages of an ASAT race are even more acute than in the past because of the greater U.S. dependence on space today. Thus, many of the technical, military, and strategic factors encouraging a nonweaponization tradition continue to hold today.

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277. *Id.* at 237-43.

278. G.A. Res. 1884, U.N. GAOR, 18th Sess., Supp. 15, at 13 U.N. Doc. A/5571 (1963).

279. Outer Space Treaty, *supra* note 27.

280. ABM Treaty, *supra* note 14.

281. The General Assembly has passed resolutions each year for more than twenty years calling for maintenance of peaceful uses of space and prevention of an arms race in space. Most of these resolutions have been unanimous, although the United States and a few other governments have abstained. Most recently, in December 2003, the General Assembly once again passed, by a vote of 174 to zero, a resolution calling for the prevention of an arms race in space. *Prevention of an Arms Race in Outer Space*, G.A. Res. 58/36, U.N. GAOR, 58th Sess., Agenda Item 72, U.N. Doc. A/RES/58/36 (2004). Israel, the Marshall Islands, Micronesia, and the United States abstained. Rebecca Johnson, *'Troubled and Troubling Times:' The UN First Committee Considers Disarmament and Reform*, DISARMAMENT DIPLOMACY, Dec. 2003, http://www.acronym.org.uk/dd/dd74/74un.htm.

282. Views in the Air Force are actually mixed, although the evidence is difficult to come by. According to Lt. Col. Bruce Deblois, if there is a large increase in funding for space weapons, this mix of views will come to a head, as various branches of the Air Force will inevitably vie for scarce resources. E-mail from Lt. Col. Bruce Deblois, U.S. Air Force, to author (Oct. 29, 2003, 08:07 EST) (on file with author). One clear line of cleavage falls between supporters of air power and supporters of space power. The former worry that space power is going to draw attention and resources away from the traditional focus of the Air Force on air power. Thus, some argue for a separate space force. *See* MAJ. ALEC M. ROBINSON, DISTINGUISHING SPACE POWER FROM AIR POWER: IMPLICATIONS FOR THE SPACE FORCE DEBATE (1998) (unpublished research report), *at* http://www.fas.org/spp/eprint/98-239.pdf.

3. *Rules for a Space Sanctuary Regime*

A more elaborated operational regime for a space sanctuary could begin with two basic rules: no weapons in space and no interference with space assets. These would be insufficient to sustain an operational sanctuary regime, however, and would need to be accompanied by two additional sets of rules: rules defining permissible limits on military activities in space, especially with regard to observation and sensing; and rules allocating rights to space among various uses (e.g., economic, scientific, and military) and various users.

Since there are no weapons in space today, one obvious limit will be to prohibit weapons based in space. No nation is likely to object to intercontintental ballistic missile (ICBM) trajectories through space, so these would be permitted. However, U.S. missile defenses, under the space sanctuary rules suggested here, would not include weapons based in space. Also prohibited would be the testing and deployment of earth-based and air-based ASAT weapons, although verification of such an agreement would be difficult because of the residual ASAT capabilities of missile defenses. An alternative strategy would be to ban weapons from higher orbits (above 500 miles). This would permit attacking ballistic missiles traveling through (near-earth) space, but would forbid shooting from space or attacking permanent objects in space.[283]

In addition to the ban on deploying weapons in space, a second core rule of the regime would be a prohibition on interference with space assets. Assets in space are highly vulnerable, and any space security regime would need to incorporate a strong normative prohibition against interfering with them, or threatening to do so. Superpower arms control agreements, including the ABM, SALT, and START treaties, contained provisions prohibiting interference with "national technical means," or each side's satellite monitoring capabilities.[284] This rule should be generalized to cover all space assets. It would guarantee immunity to satellites, installations, and their components in space that perform "peaceful" and security-related functions, including agreed-upon military support activities. Interference with space assets would be viewed as aggression, and violations would incur strong sanctions or penalties. Such a rule would have the virtue of clarity, simplicity, and coherence. Most states would have a strong interest in having their space assets immune from attack. Reciprocity and the threat of retaliation would help to sustain the rule. Since such a rule would be in the greatest interest of states heavily dependent on space assets, powerful states would have an interest in supporting it. Obviously, there may be pressure to violate the rule in times of crisis. While such a rule certainly could not prevent a state determined to violate it from doing so, it would make attack upon a space asset a very serious matter, with possibly severe consequences to follow.

While these two rules—nonweaponization and noninterference—might form the core of a space sanctuary regime, a noninterference rule (e.g., freedom of the seas) is easily abused as freedom to disregard the interests of

283. Moltz, *supra* note 117.
284. *See supra* note 39.

others. It thus requires clear, agreed-upon limits on the activities entitled to enjoy noninterference. In space, this means clear rules about the limits of permissible military support activities, which are currently unconstrained. The central issue here is the role of satellites in supporting earth-based weapons. Satellites are assuming an ever-growing role in the application of weapons based on earth. Some of their uses as "gunsights in space"[285]—such as identification and location of targets for long-range precision attack, missile guidance, and conduct of offensive ground operations—are arguably highly aggressive. These roles will increase once states master the techniques for tracking moving objects on earth from space. Thus, space could be used to employ many weapons systems not based in space, including nuclear and conventional strategic strike missions.[286]

Defenders of such activities argue that the use of satellites for precise target acquisition has reduced human suffering in warfare.[287] This may be true on some level, but this benefit risks being overwhelmed by the possible extension of the strategic threat to space and the consequent collapse of global strategic stability. States also are currently free to use measures such as camouflage and deception to conceal sensitive military activities in space. There are also no limits on the number of objects a state may launch into space. The permissibility of launching a large number of decoys could be questioned at some point in the future. Where all these activities cross the line into "non-peaceful" remains undefined.

The need for clarification is becoming urgent because of conflicting interpretations of the current legal regime. The United States maintains that the current right to transit space is customary (thus permitting any activities that are not expressly prohibited).[288] China rejects this view, arguing that the right to transit space is provided by the Outer Space Treaty, and is therefore contingent on the transits being peaceful.[289] China has made clear that its interpretation of what counts as peaceful will be revised if the United States moves weaponry into space. In that event, China will likely take a much

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285. Lt. Col. Peter L. Hays, Paths Toward Space Weaponization, Paper Presented at the Annual Meeting of the International Studies Association 4 (March 2002), *at* http://www.isanet.org/noarchive/hays.html

286. Lindsey, *supra* note 269, at 4.

287. Michel Bourbonniere, Presentation at the Conference on Present and Future Challenges to Air and Space Law, McGill University (April 20, 2002).

288. The United States considers the space systems of any state to be national property, which enjoys a right of peaceful passage through space without interference. White House, National Science and Technology Council, Fact Sheet: National Space Policy 2 (Sept. 19, 1996), http://www.ostp.gov/NSTC/html/fs/fs-5.html.

289. China argues that certain military activities, such as space-based missile defense, are currently permissible through a loophole in the Outer Space Treaty, and supports negotiation of a ban on weapons in space. According to the Chinese Ambassador to the Conference on Disarmament, Hu Xiaodi,

> Legally speaking, the loophole in the present international legal regime makes it possible to introduce weapons into outer space . . . . The international community [should negotiate] a legal instrument . . . to prevent or check space weaponization. It should prevent all kinds of weapons, whether they are in orbit or based on the ground.

Hu Xiaodi, Ambassador of China to the Conference on Disarmament, Statement Before the NGO Committee on Peace and Disarmament (October 11, 2001), *at* http://disarm.igc.org/T101101os3.html. For a more extended discussion, see Lewis, *supra* note 16.

narrower view of what is permitted in the way of military support activities. The United States has until now enjoyed great latitude in this area, but all these activities will be called into question if the United States moves weaponry into space and conflicts with China come to a head. China has hinted that it is willing to allow fairly sophisticated military support in exchange for some kind of restraint on space weapons.[290]

Thus, it is likely that we will need some rules on the limits of sensing and observation in support of military activities. They will be designed to reassure others that space surveillance practices used to verify compliance with treaties are not part of a clandestine ABM or espionage effort. Other states, especially Russia and China, will need reassurance that the United States is not seeking space capabilities in order to launch a disarming first strike, and that U.S. ABM deployments, precision-strike, and surveillance capabilities are not aimed at them. Such rules will also be designed to prevent the surreptitious weaponization of space, as well as the domination of space by military activities at the expense of other uses. This may entail some form of cooperative monitoring effort and joint early warning of missile launches.

In addition to constraints on military support, the international community will probably also need to devise rules for the distribution and allocation of commercial sensing data, especially in times of crisis. While states can regulate and control their own commercial remote sensing industry (if they have one), they have no such control over those of other states. This creates a strong incentive to negotiate rules to provide for the distribution of data in times of crisis.[291] Additionally, there will likely need to be rules limiting deception and camouflage in space, and regulating the number of objects a state may launch into space.

To ensure compliance with the rules, an effective operational regime for space will need a system of monitoring, verification, and enforcement. To the extent possible, it should emphasize a compliance rather than a deterrence approach to rule enforcement. A *compliance regime* restricts opportunities to violate the rules instead of making the choice to violate less attractive.[292] It involves rules, monitoring, and enforcement procedures aimed to *prevent* violations by, for example, requiring equipment with certain specifications that make violating the rules unlikely. Compliance is built into technical capabilities or procedures in a way that makes monitoring relatively transparent. For example, requiring ships to have certain kinds of hulls for pollution control, or spacecraft to have certain physical characteristics (e.g., non-hardening), makes it difficult to violate certain rules, and easier to detect possible violations. In effect, compliance with the regime is coerced. In contrast, *deterrence regimes* aim to *deter* violations through penalties or sanctions. This mechanism of enforcement is also important, but violations under this type of scheme are often harder to detect. A compliance approach

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290. Lewis, *supra* note 16.

291. Capt. Michael R. Hoversten, *U.S. National Security and Government Regulation of Commercial Remote Sensing from Outer Space*, 50 A.F. L. REV. 253, 280 (2001).

292. Ronald Mitchell, *Regime Design Matters: International Oil Pollution and Treaty Compliance*, 48 INT'L ORG. 425, 428 (1994).

will be difficult to implement in space because of the dual-use nature of much of the technology.

Finally, an operating regime for space will need to be built around norms and processes of transparency. Transparency measures are an important mechanism of both reassurance and verification when linked to cooperative obligations.[293] Transparency measures serve to demonstrate peaceful intent, good faith, and ongoing compliance with the rules. Such measures would provide for the systematic exchange of relevant information on space activities, including generally available information and, where conditions for access and use are agreed upon, more sensitive information.

One example would be the development of an on-site prelaunch verification regime. This could build on the U.N. Registration Convention,[294] which is intended to be a transparency mechanism but is currently not very demanding. A verification regime could be strengthened to provide details about the nature and function of the spacecraft (e.g., tracking space objects, monitoring telemetry, and observation) and about transparency of use. In addition, "[p]arameters such as radiation hardening, weight, power, nature of telemetry transmission, free availability of data and satellite services, and international participation could be used as additional elements to categorize peaceful uses."[295] Lack of data or inadequate compliance with these aspects would be an indicator of suspicious use. For such a regime to qualify as true verification, it would have to go beyond transparency without obligation. The information reported or collected about the various parameters would have to reflect agreement about how each characteristic relates to acceptable or prohibited activities.[296] Other transparency mechanisms could include advance notification of launches with expected orbital parameters, minimum separation distances between spacecraft, inspection procedures, and consultative mechanisms to reduce misperceptions arising from ambiguous activities or accidents in space. "One stabilizing multilateral step . . . would be to provide warning to any interested state of the launching of rockets anywhere in the world."[297]

These various sets of rules would obviously need greater specification, and their technical details would have to be worked out.[298] However, they might provide the core of a more formalized space sanctuary regime.

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293. Transparency can also involve stand alone measures (i.e., those that impose no constraints on state behavior other than simply a requirement to report on what the state is doing), but this is not a mechanism of verification because it is not linked to agreed-upon cooperative obligations. NANCY GALLAGHER, THE POLITICS OF VERIFICATION 28-29 (1999).

294. *See* Registration Convention, *supra* note 27.

295. Chandrashekar, *supra* note 273, at 77.

296. GALLAGHER, *supra* note 293.

297. George Lindsey, *Symposium Summary*, *in* ARMS CONTROL AND THE RULE OF LAW, *supra* note 70, at 189, 194.

298. Further specification of the rules quickly becomes quite technical. While this is beyond the scope of this Article, it would require, as a start, defining such things as: where outer space begins; what constitutes a space weapon (and especially differentiating it from other military objects that are not classed as weapons); where the line is to be drawn between permitted and prohibited activities; and both technical and nontechnical monitoring and verification measures. There has been extensive debate on a number of these definitional issues. For a useful overview, see Robert E. White, *Space Weapons Ban: Thoughts on a New Treaty* [Excerpt], INESAP INFORMATION BULLETIN No. 20 (Int'l Network of Eng'rs

D. *New Processes and Institutions*

Three alternative models for creation of a more elaborated space regime are provided by: (1) the UNCLOS III approach to the law of the sea; (2) the "framework-protocol" approach of several recent environmental treaties; and (3) the "Ottawa process" approach of the landmines campaign. Each has its strengths and weaknesses. The UNCLOS III model suggests an enormous, comprehensive effort that results in a massive, very detailed, and complex regulatory agreement that is in effect a kind of constitution for space.[299] It specifies very detailed operational rules and sets up new decisionmaking, monitoring, and dispute resolution structures. This approach would produce the kind of detailed operating regime needed for space. But it would require difficult, highly complex, and detailed negotiations over an extended period. For such a massive effort to be successful, it would require a major political commitment to the process and leadership on the part of the dominant actors. Although some states might be interested, the United States, which played a major leadership role in the UNCLOS III negotiations, shows no comparable interest in a similar negotiation process for space at this time.[300]

In contrast, the framework-protocol approach is a more incremental process. As illustrated by the Vienna Convention for the Protection of the Ozone Layer[301] and the United Nations Framework Convention on Climate Change,[302] a framework convention typically establishes a structure for further cooperation among the parties through monitoring and implementation procedures, data exchange, and facilitation of scientific research, while protocols provide for greater specificity in complex regulation. This permits a treaty "embodying general principles to come into force and a cooperative regime to get under way where the consensus necessary for a more detailed agreement is lacking."[303] This approach emphasizes common interests and common benefits. It also emphasizes compliance, implementation, and mutual consultation, rather than breach, sanctions, and compulsory jurisdiction.[304] It focuses on transparency and capacity-building as ways to induce compliance. The advantage of the approach is that it allows the process of cooperation to move forward even while the endpoint remains out of sight. The disadvantages of the approach for space, as illustrated by the grimly slow

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& Scientists Against Proliferation), Aug. 2002, http://www.inesap.org/bulletin20/bul20art08.htm.

299. Some legal scholars have argued that the UNCLOS III model, with appropriate modifications, should logically be extended to space. "The essential concepts for a meaningful management regime for outer space—namely, disarmament and development, overlaid by the [common heritage of mankind] philosophy and the concept of 'comprehensive security'—are already in place . . . ." Jan Van Ettinger et al., *Ocean Governance and the Global Picture*, *in* OCEAN GOVERNANCE: SUSTAINABLE DEVELOPMENT OF THE SEAS 247, 266 (Peter Bautista Payoyo ed., 1994).

300. The United States has staunchly opposed negotiations on the Prevention of an Arms Race in Outer Space (PAROS) in the U.N. Conference on Disarmament. Wade Boese, *Chinese Concession Fails To End UN Disarmament Conference Stalemate*, ARMS CONTROL TODAY, Oct. 2003, at 29, *available at* http://www.armscontrol.org/act/2003_10/CD.asp. *See also* Javits, *supra* note 75.

301. Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, T.I.A.S. No. 11,097, at 4, 1513 U.N.T.S. 293.

302. United Nations Framework Convention on Climate Change, *supra* note 234.

303. CHAYES & CHAYES, *supra* note 140, at 226.

304. For an extended analysis of the virtues of management as opposed to enforcement regimes, see generally *id.*

progress of the Kyoto Protocol, is that the process may become stalled at the framework level if states cannot agree on operational solutions, and thus agreement on detailed operating rules is repeatedly put off for the future—a risky situation for space.

A third approach is an "Ottawa process." This is based on the model of the landmines campaign, whereby civil society and a few conscientious states led the way in achieving a worldwide ban on landmines. The virtue of this process is that it takes the process of creating new norms out of the exclusive hands of states. It would involve mobilizing coalitions of nongovernmental organizations (NGOs) and countries and industries with significant commercial interests in nonmilitary uses of space.[305] Most defense companies, which mount powerful lobbies in the United States, have a vested interest in weaponizing space and thus may be hard to interest in this process. Since the landmines campaign, the United States has sought to avoid circumstances that might lead to other Ottawa-type processes outside the regular U.N. negotiating fora (e.g., for small arms), and could be expected to resist such a process for space. China and others would not be enthusiastic about NGO participation. At one level, of course, there is nothing to stop coalitions of NGOs and interested states from getting such a process going, since they do not need anyone's permission to do so. However, the result could be meaningless unless the United States, the 800-pound gorilla in space, agrees to go along with the results.

Given the current distribution of power and interests in space, an UNCLOS III-type process seems unlikely at this point. The creation of a more specified regime for space will more likely entail some combination of a framework approach and an Ottawa process. As long as the United States continues to resist negotiations on space weapons, interested states, NGOs, commercial enterprises, and other parties may simply have to move forward in alternative fora with an "agenda politics" approach to the creation of new principles and norms for space. It is important to establish as soon as possible the relevant framework (i.e., the principles of comprehensive security, equal protection in space, and equity) as well as the basic rules of restraint (i.e., nonweaponization, noninterference, and defined limits on activities). These new norms can begin to orient both political activity and activities in space. Because the United States has multiple interests in space, it is not unreasonable to think that it will eventually discover that it is better to join the effort rather than to watch from the sidelines.[306]

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305. This approach is advocated in Johnson, *supra* note 37.

306. There appears little prospect that this will happen under the Bush administration. Current U.S. opposition to arms control in space is tied closely to the Bush administration's agenda of deploying weapons there. *See supra* notes 4-15 and accompanying text. A different U.S. administration, less categorically opposed to international treaties and more circumspect regarding space weapons, may well be more receptive to elaborating a more comprehensive space regime. Given the Bush administration's opposition to negotiations, supporters of a space weapons ban have called for vigorous opposition to space weaponization as a fallback position to place pressure on the U.S. government to delay the first steps toward weaponization. *See* Jonathan Dean, *Future Security in Space: Conference Report*, INESAP INFORMATION BULLETIN No. 20 (Int'l Network of Scientists & Eng'rs Against Proliferation), Aug. 2002, http://www.inesap.org/bulletin20/bul20art04.htm.

V. CONCLUSION

The challenge the international community faces in space today is the imminent collapse of a forty-five-year tradition of restraint with regard to military activities in space. U.S. plans for "global engagement" represent the abandonment of any concept of restraint in favor of a regime of unilateral assertion of power, largely in disregard of the interests of others. If pursued, such a strategy will undermine the fragile existing legal order in space that is widely supported by the rest of the world. This will place in jeopardy not only the interests of other nations in space, but the multiple interests there of the United States itself.

Because of the threat posed by this development, it is clear that, one way or another, a new regime for space will emerge. The existing regime cannot survive in its current form in the face of the new challenges. Either it will be transformed by agreement into a more elaborated operating regime that balances the various interests in space on the basis of new guiding principles and norms, or it will be transformed by default into a regime of power and an arena of military competition dominated by the United States.

What are the prospects for a nonweaponization regime for space? It is obvious that no viable legal regime for space can be established without the agreement of the major space powers. On the other hand, it is equally obvious that a regime that neglects the needs of others will be rejected by subsequent space-active countries. Today, there are more spacefaring countries that are in a position to influence the issue than there were in the 1960s and 1970s. This provides some reason for optimism. What led to the dramatic changes in ocean law was that the multitude of developing states realized that, although they could not match the great powers in long-distance fleets and technology, they could thwart their freedom of movement by extending jurisdictional claims into the oceans. Likewise in space, other states will not be able to match the United States in capabilities, but they can thwart U.S. freedom of action through various kinds of interference, such as jamming satellite signals. This creates a strong incentive for the United States to negotiate clear rules of behavior that will preserve its broad interests in space.

Today the freedom of the seas principle is increasingly dysfunctional, but hegemony need not be. The United States should use its power and position to support the creation of an operational regime for space based on the rule of law, rather than pursue a short-sighted policy of competition for national dominance. Security in space will be more effectively achieved through a rule-based regime than through the deployment of destabilizing weapons systems. The rest of the world is not rushing to weaponize space, and instead appears ready to follow the U.S. lead in devising new rules for its effective management. In the long run, the best way to protect U.S. commercial, scientific, and security interests in space will be through the stability of the rule of law, rather than through unilateral assertions of military power. The United States should take the lead in promoting the transition to a regime of mutual restraint and benefit in space.